25th (Silver Jubilee) Pakistan Society of Haematology Annual Conference

PAKISTAN SOCIETY OF HAEMATOLOGY

Message
Chair, Scientific Committee

Assalam o Alaikum

Dear Participants

I welcome you all to the HAEMCON 2023, Silver Jubilee International Conference of PSH, being held in the beautiful city of Lahore. The robust scientific program, with distinguished national and international speakers as well as the research presentations of our young hematologists, promises a very healthy exchange of scientific knowledge in the field of hematology. I extend my special gratitude to the speakers for sparing their valuable time for this conference.

Fifteen workshops have been arranged in different Institutions by leading hematologists to impart knowledge and hands on skills to the budding hematologists. The Scientific committee received 123 abstracts of original research work by the hematologists and residents. From these 44 have been selected, after reviewing the blinded abstracts, for oral presentation in various sessions of the conference. Another important feature is the parallel laboratory hematology session for hematologists as well as laboratory technologists. I would like to compliment and thank the members of the scientific committee for their valuable contribution in planning the program.

We hope that you will all participate interactively in this conference and benefit from the presentations of the distinguished speakers and the original research of our junior colleagues.

Professor Samina Naeem
MBBS, FCPS, MPhil, PhD
Consultant Hematologist Hameed Latif Hospital
Former Chairperson, Department of Pathology, KEMU.

Message
Chair, Scientific Committee

It is my proud privilege to be the chairperson of the scientific committee of 25th PSH conference, which is to be held at UHS, Lahore.

The University of Health Sciences is located in the heart of the city and it is providing it's students/scholars an opportunity to research in diverse fields of medical sciences. It is a special occasion for me because the department of hematology is organizing this international conference. It was established under my supervision in 2008 and during the last fourteen years, the department has made significant advancement during all these years. UHS scholars are contributing in different capacities all over the country.

We received 123 abstracts from almost all the leading institutes of the country, out of which 44 has been selected for oral presentations. A strategy was devised to scrutinize the abstracts, which were first segregated according to the topics then the abstracts for oral presentations were picked up (6-8) free papers for every scientific session. Posters will be displayed in the designated areas. Eminent hematologists who were part of the scientific committee participated in the activity of selection, script reading and requesting the author for correction if required. Reviewers were blinded for purpose of unbiased selection.

A unique feature of the upcoming conference is that a parallel session will be held for oral presentations of medical students, nurses and medical technologists. Consultants of Allied specialties will also be given an opportunity to participate.

Management committee is working tirelessly to make the conference a success, for the dissemination of knowledge to health professionals.

Prof Dr Shahida Moshin
MBBS, FCPS, MS

Pre-Conference Workshop

Pre-Conference Workshops

16th January - 2nd March 2023

S. No	Workshop titles	Team Leads	Time
1	Manuscript Writing and Publishing; A step by step Approach	Dr Iram Habib	9:00am-2:00 pm
2	Quality Assurance in Haematology Laboratory to Improve Patient Safety	Dr Yusra Rashid	9:00am-2:00 pm
3	Hemoglobinopathy	Dr Naghmana Mazhar	9:00am-2:00 pm
4	Molecular Hematology: Diagnostics and Beyond	Dr Ayesha Younis Dr Isma Imtiaz	9:00am-2:00 pm
5	Haemoparasites and Fungal Infections in the Era of Digital Haematology	Dr Shizra Kaleemi	9:00am-2:00 pm
6	Consultative Hematology	Dr	9:00am-2:00 pm
7	Cytogenetics	Dr Iram Tufail	9:00am-2:00 pm
8	Morphology of Benign Hematological Disorders	Dr Arsala Rashid	9:00am-2:00 pm
9	Transfusion Medicine	Dr Saima Farhfan Dr Nazish Saqlain	9:00am-2:00 pm
10	Morphology of Malignant Hematological Disorders	Brig. (R) Dr Abdul Naeem	9:00am-2:00 pm
11	Compendium Diagnostics- Advancing Towards Next Generation of Hematology Testing in Pakistan	Dr Hajrah Syndeed Pal	9:00am-2:00 pm
12	Flow Cytometry	Dr Tooba Ammar	9:00am-2:00 pm
13	Coagulation	Dr Nimrah Ishaq Dr Ashja	9:00am-2:00 pm

Pre-Conference Workshops

14	Blood Bank Quality Assurance	Dr Hussain Farooq	9:00am-2:00 pm

Day 1: Thursday, February 16, 2023

Time	Inaugural Session	Speaker
08:00 am - 08:30 am	Onsite Registration	
08:30 am - 08:50 am	Guests to be seated	
08:50am-08:55 am	Welcome Address	Prof. Dr. Salman Naseem Adil President Pakistan Society of Haematology
08:55am-09:00 am	Address by Vice Chancellor UHS	Prof Dr Ahsan Waheed Rathore
09:00am- 9:20 am	Al Razi Lecture, Hematology: Past, Present Future	Maj Gen ® Muhammad Ayub Ex Commandant AFIP
09:20 am-09:40 am	Ibn e Sina Lecture: How to ensure Quality in Hematology Practice?	Prof. Dr. Aaron Han Deputy Commissioner CAP
09:40am- 09:55 am	Inaugural address by Chief Guest	Mr. Mohsin Naqvi Chief Minister Punjab Prof. Dr. Javed Akram Health Minister Punjab
09:55am-10:00 am	Vote of Thanks and Memorial Video of Late Prof. Dr. Abdul Hayee	Dr. Muhammad Asif Naveed Chairperson Haemcon 2023

Session-I: Red Cell Disorders and Bone Marrow Failure Syndromes

Moderator	Dr. Rafeeda Maab		
Chairpersons/ Panelists	Prof Dr Khalid Zafar Hashmi	Maj. Gen ® Dr Suhaib Ahmad	Prof Dr Shahida Mohsin
	Prof Dr Ayesha Junaid	Prof Dr Fouzia Iqbal Butt	

Plenary Talks

Time	Topic	Speaker
10:30am-10:50 am	Inherited Bone Marrow Failure Syndrome	Prof. Dr. Nisar Ahmad Ex-HOD Children Hospital Lahore

Day 1: Thursday, February 16, 2023

10:50am-11:10 am	Management of Sickle Cell Disease and Recent Advances	Dr. Farrukh Shah Consultant Haematologist Whittington Hospital, UK
11:10am-11:30 am	Preliminary report on beta thalassemia major EMR in Punjab	Prof. Dr. Shabnam Bashir Fatima Jinnah Medical University Lahore
11:30am-11:50 am	Genetic Modifiers in beta-thalassemia and their Role in Phenotype Modulation	Prof. Dr. Maria Domenica Capellini University of Milan, Italy
11:50am-12:10 pm	Recent Advances in treatment of Aplastic Anemia	Dr. Saqib Ansari Children Hospital Karachi
12:10pm- 12:20 pm	Panel Discussion Questions	
	Free Papers	
12:20pm-12:26 pm	Association Between Genotype and Endocrine Complications in Pakistani Patients with Beta Thalassemia	Dr. Ayesha Younus Chughtai Institute of Pathology, Lahore
12:27pm-12:33 pm	Frequency Of Alpha Thalassemia (3.7 And 4.2 Gene Deletion) in Pregnant Women with Microcytic Hypochromic Anemias	Dr. Imran Shahid University of Health Sciences, Lahore
12:34pm-12:40 pm	Diagnostic Utility of Bone Marrow Biopsy/Bone Marrow Culture in Patients with Pyrexia of Unknown Origin: A Ten-Year Retrospective Analysis	Dr. Sehar Khaliq Foundation University Islamabad
12:41pm- 12:47 pm	Evaluation Of the Combination Therapy of Hydroxyurea and Thalidomide In B-Thalassemia	Dr. Misbah Munir Children Hospital Karachi
12:48pm- 01:05 pm	**Questions and Answers**	

Day 1: Thursday, February 16, 2023

01:05pm- 01:25pm	Role of Ruxolitnib in Management of GvHD Industry Sponsored Lecture (Novartis)	Maj Gen ® Pervez Ahmad
01:25pm- 02:10pm	**Lunch and Prayer Break**	

Session-II: White Blood Cell Disorders

Moderator	Dr Nada Junaid		
Chairpersons/ Panelists	Prof. Dr. Khursheed Ahmad	Prof. Dr. Zeba Aziz	Prof Dr Mona Aziz
	Brig. ® Nadir Ali	Brig. Dr. Asad Abbasi	

Plenary Talk

Time	Topic	Speaker
02:10pm-02:30 pm	New Investigational Combinations for high-risk Myelodysplastic Syndrome	Dr. Abbas Khokhar King Edward Medical University Lahore
02:30pm-02:50 pm	Disorders of Monocytes	Prof. Aaron Han Deputy Commissioner (UAE) College of American Pathologists
02:50pm-03:10 pm	Update on Management of Acute Lymphoblastic Leukemia	Prof. Mary Taj Royal Marsden Hospital, London. UK
03:10pm-03:30 pm	CLL: Treatment options and Recent updates with focus on BTKi	Dr. Khurram Tariq Seby B. Jones Regional Cancer Center, USA
03:30pm-03:50 pm	Advancements in the management of AML: Where do we stand?	Prof. Dr. Usman Sheikh Aga Khan University, Karachi
03:50pm-04:05 pm	**Panel Discussion** **Questions and Answers**	
	Free Papers	
04:05pm-04:11 pm	Data Visualization and CBC-based Morphometric Parameters: Revealing a New Diagnostic Tale for Acute Promyelocytic Leukemia.	Dr. Sidra Izhar Baqai Medical University, Karachi
04:12pm-04:18 pm	Comparison of MTHFR C677T and A1298C Genetic Polymorphism in Chronic Myeloid Leukemia and Normal Healthy Individuals	Dr. Afshan Amir Sumra University of Health Sciences, Lahore

04:19pm-04:25 pm	Association Between Cytogenetic Findings and Post Induction Minimal Residual Disease in Childhood B-Lymphoblastic Leukemia	Dr. Esha Farooq The Indus Hospital Karachi
04:26pm-04:32 pm	Characterization of Acute Promyelocytic Leukaemia: Follow Up Study at A Tertiary Care Center	Dr. Maymoona Suhail Armed Forces Institute of Pahtology
04:33pm-04:39 pm	Clinicohematoligical Characteristics and Cytogenetic Profile of Chronic Myelomonocytic Leukemia; An Experience from Pakistan	Dr. Zoya Ziad National Institute of Blood Diseases, Karachi
04:40pm-04:46 pm	Development of Real Time Quantitative PCR For Detection and Monitoring of BCR-ABL P190 Transcript in Acute Lymphoblastic Leukemia Patients	Dr. Gulshan Munir Hayat Abad Medical Complex Peshawar
04:47pm-04:52 pm	Diagnostic Utility and Critical Analysis of Flow Cytometric Data in Acute Leukemia	Dr. Farwa Raza Armed Forces Institute of Bone Marrow Transplantation, Rawalpindi
04:53pm-04:59 pm	Mutational landscape of hematological disorders in Pakistan	Dr. Zaineb Akram National University of Medical Sciences, Islamabad
05:00pm- 05:30 pm	**Questions and Answers**	

Day 2: Friday, February 17, 2023

Session-I: Platelets and Coagulation Disorders

Moderator	Dr Umera Saleem		
Chairpersons/ Panelists	Prof. Dr. Samina Naeem	Prof. Dr. Ikram ud Din Ujjan	Prof. Dr. Ambareen Hameed
	Prof. Dr. Fazal-e-Raziq	Prof. Dr. Ayesha Ahsan	

Plenary Talks

Time	Topic	Speaker
08:15am- 08:35 am	Inherited Thrombophilias	Brig. Dr. Hamid Saeed Malik Armed Forces Institute of Pathology
08:35am- 08:55 am	Hospital Acquired Venous Thromboembolism	Prof. Dr. Bushra Moiz Aga Khan University Karachi
08:55am- 09:15 am	Anticoagulation and Sex related Challenges	Dr. Abdul Manan Glan Clwyd Hospital & Bangor Hospital, UK
09:15am- 09:35 am	Inherited Thrombocytopenias	Prof. Dr. Marie-Christine Alisse Aix Marsellie University France
09:35am- 09:55 am	Acquired Coagulopathies	Prof. Catherine Hayward Mc Master University Toronto, Canada
09:55am-10:15 am	Emicizumab prophylaxis: a novel alternative therapy for Haemophilia A patients with inhibitors.	Dr. Munira Borhany Dr. Ziauddin Hospital Karachi
10:15am-10:30 am	**Panel Discussion** **Questions and Answers**	

10:30am– 11:00 am	**Tea Break**	
11:00am-11:15 am	Genetic alterations in type III von Willebrand Disease	Dr. Muhammad Asif Naveed University of Health Sciences, Lahore
	Free Papers	
11:16am-11:22 am	Coagulation Profile in COVID-19 Patients and its Relation to Disease Severity	Dr. Warda Iqbal Liaquat University of Medical and Health Sciences, Jamshoro
11:23am-11:29 am	Evaluation Of NLR and PLR in Immune Thrombocytopenic Purpura; Is It Worth Doing?	Dr. Aisha Arshad National Institute of Blood Diseases, Karachi
11:30am-11:36 am	Frequency of Inhibitors Among Know Hemophilia A Patients Presenting to Hematology Department of Tertiary Care Hospital	Dr. Javeria Abdullah Amir ud Din Medical College/Postgraduate Medical Institute, Lahore
11:37am-11:43 am	Platelet Factor 4 (PF4 Antibody) in Diabetic and Non-Diabetic Patients during Heparin Therapy	Dr. Razia Asif Liaquat University of Medical and Health Sciences, Jamshoro
11:44am-11:50 am	Role of Immature Platelet Fraction and Glycemic Control in Development of Complications in Type 2 Diabetic Patients	Prof. Dr. Sobia Ashraf University of Lahore
11:51am-11:56 am	Utilization Of Neutrophil-To-Lymphocyte Ratio to Assess Recovery in Patients With Dengue	Dr. Nimrah Ishaque Chughtai Institute of Pathology, Lahore
11:57am-12:03 pm	Association between Mean Platelet Volume and Cardiac Troponin I Level in Patients with Acute Coronary Syndrome.	Dr. Sana Iqbal Sheikh Zayed Hospital Lahore

12:04pm- 12:20 pm	**Questions and Answers**	
12:20pm-12:40 pm	Sample Quality in Pre-analytics (Industry Sponsored Lecture by Sejazuddin & Co)	Dr. Maria Agafonova Greiner Bio One
12:40pm-01:10 pm	**General Body Meeting**	
01:10pm-02:00 pm	**Lunch and Prayer Break**	

Session-II: Transfusion Medicine

Moderator	Dr Nazish Saqlain		
Chairpersons/ Panelists	Maj. Gen. ® Dr. Saleem Ahmad Khan	Prof. Dr. Yasmeen Lodhi	Prof Dr Faiza Bashir
	Prof. Dr. Humera Rafiq	Prof. Dr. Hanif Mengal	

Time	Topic	Speaker
02:00pm-02:20 pm	Roche Blood Safety Solutions: Ensuring availability of safe blood (Industry Sponsored Lecture by Roche Diagnostics)	Mr. Zaki Masood Siddiqui
Plenary Talks		
02:20pm-02:40 pm	Blood Bank KPIs: How to Select, Develop and Analyze	Prof. Dr. Saba Jamal Indus Hospital Karachi

02:40pm-03:00 pm	Establishment of Plasma Fractionation in Pakistan	Prof. Dr. Hassan A. Zaheer Advisor WHO Consultant CansinoBio
03:00pm-03:20 pm	Plasma Derived Medicinal Products: What, Why and How	Prof. Brig ® Dr. Nuzhat Mushahid Riphah University Islamabad
03:20pm-03:40 pm	Blood Product Inventory Management and Massive Haemorrhage Protocol	Dr. Asad Hayat Shaukat Khanum Memorial Cancer Hospital, Lahore
03:40pm-04:00 pm	Patient Blood Management and Hemovigilance in Government Sector Hospitals of Sindh by Regional Blood Centres	Dr. Samra Waheed Dr. Kanta Devi Regional Blood Centre Karachi
04:01pm-04:15pm	**Panel Discussion** **Questions and Answer**	
Free Papers		
04:16pm-04:22 pm	Evaluation of Haematological Parameters and Sars-Cov-2 Igg Antibodies In Neonates Born To Mothers Following Covid-19 Infection in Pregnancy.	Dr. Ihsan Alam Khan Khyber Medical University Peshawar
04:23pm- 04:29 pm	Blood bank stored red blood cells are prone lysis, and cause subclinical inflammation when transfused to patients with Thalassemia	Dr. Yasir Mehmood Yousufzai Khyber Medical University, Peshawar
04:30pm-04:36 pm	Estimating Residual Risks of Transfusion Transmitted Hepatitis B Virus and Hepatitis C Virus In Pakistan: An Impact Of Nucleic Acid Amplification Test.	Dr. Syeda Mah Ali Liaquat National Hospital Karachi
04:37pm-04:42 pm	Rh Alloimmunization in Multi-Transfused Thalassemia Patients: A Single Center Study	Dr. Ayesha Jamal University of Child Health Sciences, Lahore

04:43pm-04:49 pm	Frequency of bacterial contamination in platelets concentrates in a low middle income country: a single center data	Dr. Bhawna Kumari Aga Khan University Hospital Karachi
04:50pm-04:56 pm	Blood donor selection and deferral pattern: an important tool for blood safety at a regional blood center in Pakistan	Dr. Noor e Saba Regional Blood Centre Peshawar
04:57pm- 05:03 pm	Peripheral Hematological Predictors of Morphological Remission/ Hematopoietic Recovery in Plasma Cell Disorder (Multiple Myeloma) After Induction Chemotherapy	Dr. Hamzullah Khan Nowshera Medical College
05:04pm-05:10 pm	Prevalence of three major Rh blood group antigens (D, C, c) in the blood donor population of Peshawar, Pakistan	Dr. Akhlaq Wazir Regional Blood Centre Peshawar
05:10pm-05:30pm	**Questions and Answers**	
7:00 pm	**Gala Dinner (Haveli Asif Jah)**	

Day 3: Saturday, February 18, 2023 (Parallel Session I)

Session-I: Bone Marrow Transplant

Moderator	Dr Uzma Zaidi		
Chairpersons/ Panelists	Prof. Dr. Salman Naseem Adil	Maj Gen ® Dr. Pervez Ahmad	Maj. Gen ® Dr. Tariq Mehmood Satti

Time	Topic	Speaker
08:15am- 08:40 am	An update on haplo-identical transplantation	Maj Gen Dr. Qamar un Nissa Armed Force Institute of Bone Marrow Transplantation
08:45am- 09:10 am	Myelofibrosis; To transplant or not to transplant	Dr. Salman Fazal Allegheny Health Network, Pittsburgh, PA, USA
09:10am- 09:30 am	Challenge of COVID-19 and HSCT	Dr Ayaz Mir Shifa International Hospital, Islamabad
09:30am- 09:50 am	CAR T cells vs HSCT – are we there yet?	Dr Muzaffar Qazilbash MD Anderson Cancer Centre, Houston, USA
09:50am- 10:10 am	Advances in HSCT for primary immunodeficiency disorders	Dr Zehra Fadoo Aga Khan University Hospital Karachi
10:10am-10:30 am	Panel Discussion Questions and Answers	
10:30am – 11:00 am	**Tea Break**	

Free Papers		
11:01am-11:07 am	Fludarabine/Cyclophosphamide Conditioning Regimen in Aplastic Anemia Patients Receiving Matched-Sibling Donor Transplant Is Non-inferior to ATG/Cyclophosphamide: A Single-Center Experience from Pakistan	Dr. Waseem Shahani National Institute of Blood Diseases, Karachi
11:08am-11:14 am	Oral Mucositis in patient undergoing Hematopoietic Stem Cell Transplantation: A Single Center Experience	Dr. Muhammad Yousuf Armed Forces Institute of Bone Marrow Transplantation, Rawalpindi
11:15am-11:21 am	Pre-transplant Ganciclovir Prophylaxis to Prevent CMV infections in Allogeneic Hematopoietic Stem Cell Transplant Recipients	Dr. Khadija Bano Shifa International Hospital Islamabad
11:22am-11:28 am	Safety and Efficacy of Allogenic Hematopoietic Stem Cell Transplant in Inherited Platelet Disorders: A Single Center Experience from Pakistan	Dr. Asghar Ali Kerio Armed Forces Institute of Bone Marrow Transplantation, Rawalpindi
11:29am-11:35 am	Utility of Automated Hematology Analyzer XN 1000 in the detection of Malaria Parasites	Dr. Noorulain Fareed Dow University of Health Sciences, Lahore
11:36am-11:42 am	Incidence, Management and Outcome of Hepatic Veno-Occlusive Disease /Sinusoidal Obstruction Syndrome after Hematopoietic Stem Cell Transplant in Thalassemia Major Patients	Dr. Haider Nisar Armed Forces Institute of Bone Marrow Transplantation Rawalpindi
11:43am-11:49 am	Clinico-Haematological & Molecular Characterization of Patients with Chronic Lymphocytic Leukemia.	Dr. Aisha Hameed University of Health Sciences, Lahore
11:50am-11:56 am	Utilization of chronic lymphocytic leukemia - international prognostic index (CLL-IPI) for prognostic stratification in newly diagnosed CLL patients	Dr. Noor ul Huda Armed Forces Institute of Pathology, Rawalpindi

11:56am-12:11 pm	**Questions and Answers**	
12:11pm-12:30 pm	Changing Landscape in the treatment of DLBCL (Industry Sponsored Lecture by Dr. Usman Ahmad)	Dr. Usman Ahmad

Day 3: Saturday, February 18, 2023 (Parallel Session II)

Session-I: Laboratory Hematology

Moderator	M Asif Shaheen		
Chairpersons/ Panelists	Prof. Dr. Saqib Mehmood	Prof. Dr. Javed Asif	Prof. Dr. Muneeza Junaid
	Prof. Dr. Sajjad Haider		

Time	Topic	Speaker
09:00am- 09:20 am	Advances in Laboratory Techniques of Haematology	Dr. Arshi Naz Liaquat University of Medical and Health Science, Jamshoro
09:20am- 09:40 am	Research Grants in Laboratory Haematology; Opportunities and Proposal writing	Dr. Javeria Aijaz Indus Hospital Karachi
09:40am- 10:00 am	Interpretation of Cell Population Data of CBC and Machine Learning	Dr. Zeeshan Haider Sahara Medical College Narowal
10:00am- 10:20 am	Pre-Analytical Errors in Laboratory Haematology	Prof. Dr. Shahtaj Masood Hayat Abad Medical Complex Peshawar
10:20am- 10:40 am	Updates on the 5th edition of WHO Classification of Hematolymphoid Tumors with emphasis on Myeloid Neoplasms	Dr. Jawad Kazmi National Institute of Blood Diseases

10:40am-11:00 am	**Panel Discussion** **Questions and Answers Session**	
11:00am – 11:30 am	**Tea Break**	
	Free Papers	
11:31am-11:37 am	Pulmonary Complications following blood transfusion	Ms. Subuhi Raza Aga Khan University Hospital Karachi
11:31am-11:37 am	BioNet Dataset: AI-Based Diagnostic Solutions Using Peripheral Blood Smear Images	Mr. Usman Ali Shamas University of Health Sciences, Lahore
11:38am- 11:44 am	Differentiating between dengue fever and malaria using the hematological parameters.	Ms. Anila Zafar Aga Khan University Hospital Karachi
11:44am-11:52 am	Frequency of Aspirin resistance and its association with COX-1 gene polymorphism rs1330344	Ms. Iqra Rabbani University of Health Sciences, Lahore
11:53am-11:59 am	Assessment of severity of bleeding by using ISTH BAT questionnaire in hemophilia patients	Ms. Madiha Abid National Institute of Blood Diseases, Karachi
12:00am-12:07 pm	Why excessive transfusion when limited can work-an experience from Pakistan	Ms. Laraib Majeed National Institute of Blood Diseases Karachi
12:08am-12:15 pm	Decreased classical monocytes and CD163 expression in TB patients: an indicator of drug Resistance	Dr. Faheem Shahzad Khan University of Health Sciences, Lahore

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12:08pm-12:15 pm	Decreased classical monocytes and CD163 expression in TB patients: an indicator of drug Resistance	Dr. Faheem Shahzad Khan University of Health Sciences, Lahore

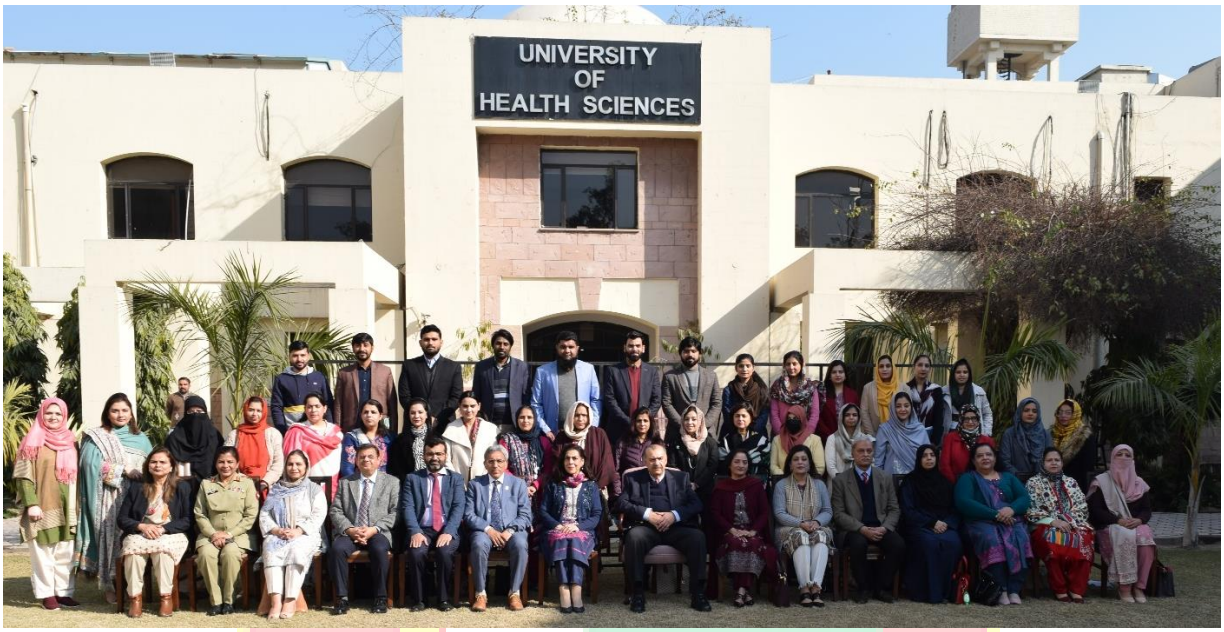
Session-III: Consultative Hematology

Moderator	Dr Tooba Fateen		
Chairpersons/ Panelists	Prof. Dr. Khalid Hassan	Dr. Saima Farhan	Dr Ayesha Imran
	Dr. Tahir Bashir	Brig ® Abdul Naeem	Dr. Samina Amanat

Time	Topic	Speaker
12:30pm-12:50 pm	Hemophagocytic lymphohistiocytosis associated with Infection	Prof. Dr. Waseem Iqbal Fazaia Ruth Fao Medical College, Karachi
12:50pm- 01:10 pm	Back to basic: the prudent use of Molecular diagnostic in Haempathology	Dr. Zeshan Ansar Aga Khan University Hospital Karachi
01:15 pm to 02:00 pm	**Lunch and Prayer Break**	
02:00pm-02:20 pm	Hematological Challenges in solid organ transplant patients.	Prof. Dr. Mona Aziz Sheikh Zayed Hospital, Lahore

02:20pm-02:40 pm	Complications of Hemophilia; Multidisciplinary Approach	Prof. Dr. Lubna Zafar Foundation University Islamabad
02:40pm-03:00 pm	COVID 19 Coagulopathies	Prof. Dr. Javed Akram Health Minister Punjnab
03:00pm-03:15 pm	**Panel Discussion** **Questions and Answers**	
03:15pm-03:35 pm	Closing Remarks Closing Ceremony	Prof. Dr. Ahsan Waheed Rathore Dr. Yusra Rashid

Photo Session

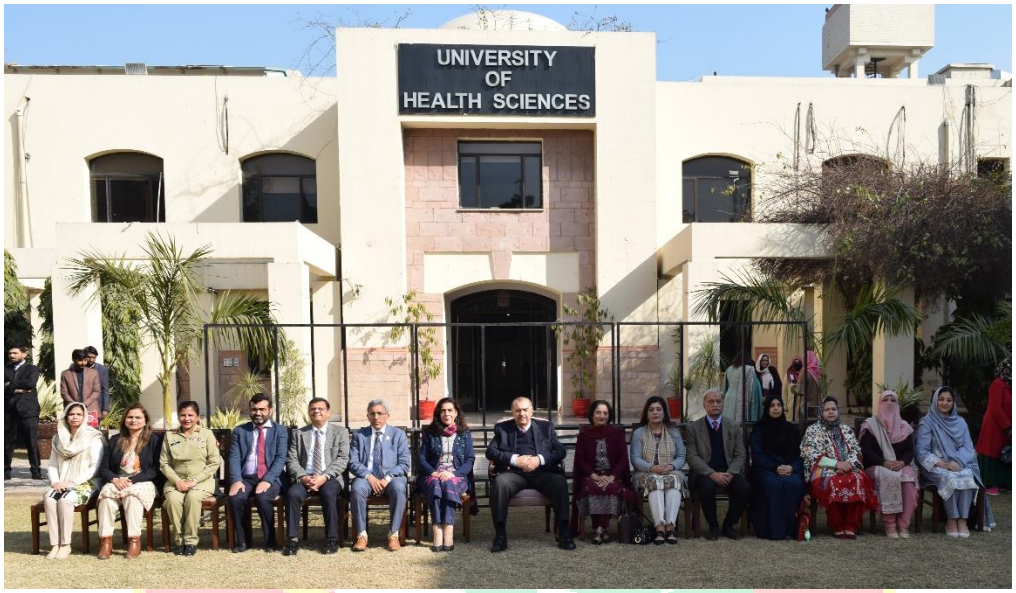


Haemcon 2023 Organizing Committee

Sitting L to R: Dr. Saima Farhan, Colonel Helen Mary Robert, Prof. Dr. Ayesha Ehsan, Brig ® Abdul Naeem, Dr. Muhammad Asif Naveed, Prof. Dr. Nisar Ahmed, Prof. Dr. Samina Naeem, Prof. Ahsan Waheed Rahtore, Prof. Dr. Shahida Mohsin, Prof. Dr. Faiza Bashir, Prof. Dr. Sajjad Haider, Prof. Dr. Ambreen Hamid, Prof. Dr. Humera Rafiq, Prof. Dr. Mona Aziz, Prof. Dr. Muneeza Natiq

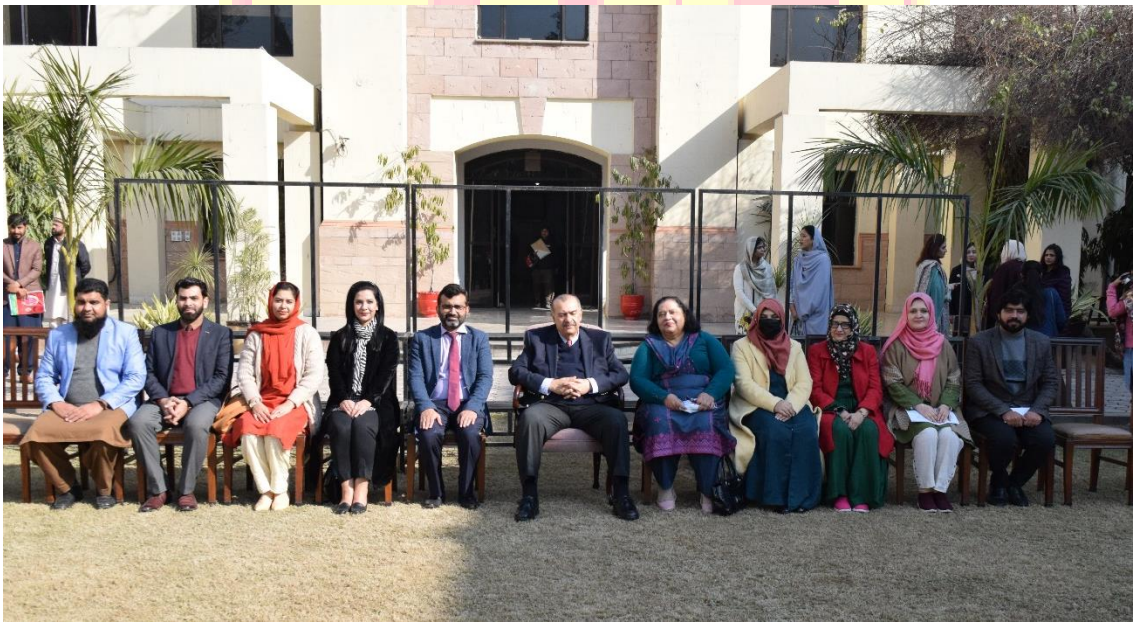
Standing Row-I L to R: Dr. Yusra Rashid, Dr. Romana Imtiaz, Prof. Dr. Hajra Syndeed Pal, Dr. Sindhu, Dr. Huma Shiekh, Dr. Arsala Rashid, Dr. Rafeeda Maab, Dr. Nabila Attique, Prof. Dr. Sobia Ashraf, Dr. Saima Mansoor, Dr. Naghmana Mazhar, Dr. Nazish Saqlain, Dr. Fauzia Amer, Dr. Tooba Fateen, Dr. Masooma Ghazanfar, Dr. Ayesha Imran, Dr. Ammrah Sharif, Dr. Shizra Kaleemi

Standing Row-II L to R: Mr. Qaim Ali, Mr. Arslan Ahmad, Dr. Omer Naseem, Mr. Muhammad Ajmal, Dr. Munir Ahmed, Dr. Muhammad Kashif Mughal, Mr. Ghulam Mustfa, Ms. Kashifa Nawab, Dr. Aania Zahra, Dr. Umme Habiba, Ms. Bushra Gillani



Scientific Committee

L to R: Dr. Masooma Ghazanfar, Dr. Saima Farhan, Colonel Helen Mary Robert, Dr. Muhammad Asif Naveed, Brig ® Abdul Naeem, Prof. Dr. Nisar Ahmed, Prof. Dr. Samina Naeem, Prof. Ahsan Waheed Rathore, Prof. Dr. Shahida Mohsin, Prof. Dr. Faiza Bashir, Prof. Dr. Sajjad Haider, Prof. Dr. Ambreen Hamid, Prof. Dr. Mona Aziz, Prof. Dr. Muneeza Natiq, Dr. Ayesha Imran



Registration Committee

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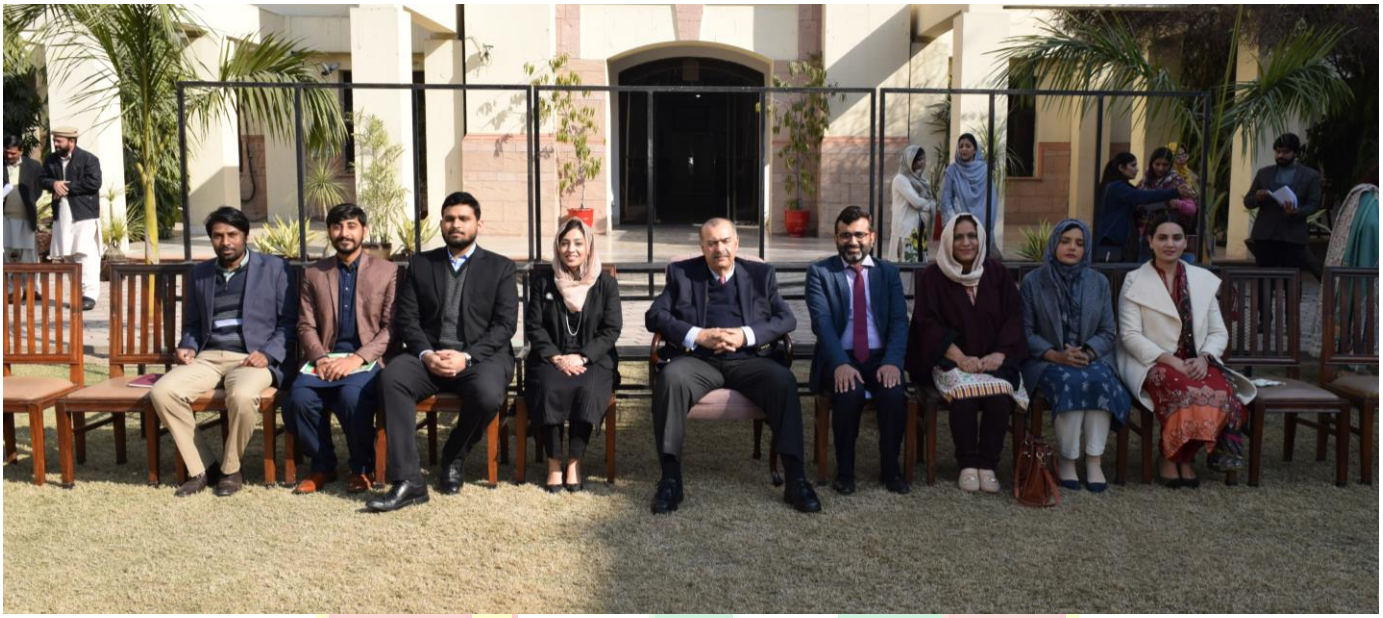
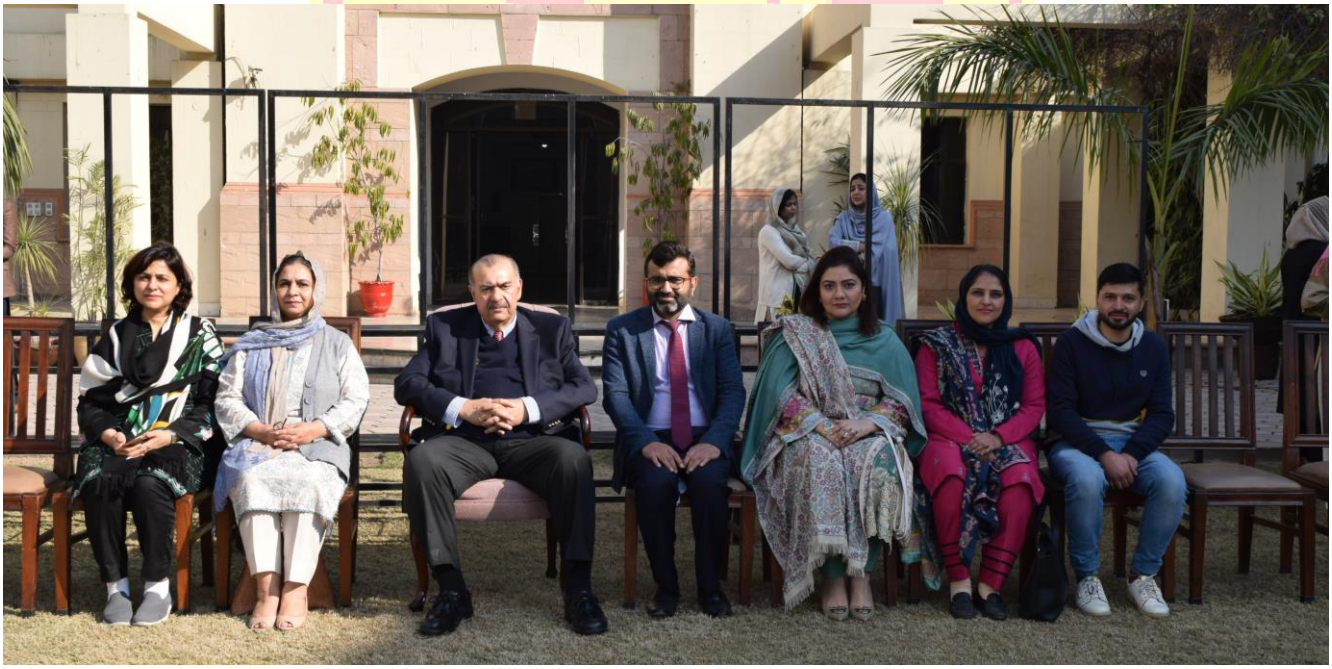


Workshop Management Committee

L to R: Mr. Muhammad Ajmal, Mr. Arslan Ahmad, Dr. Omer Naseem, Dr. Nazish Saqlain, Prof. Ahsan Waheed Rathore, Dr. Muhammad Asif Naveed, Dr. Saima Mansoor, Dr. Shizra Kaleemi, Dr. Nabila Attique



Publication & Media Committee

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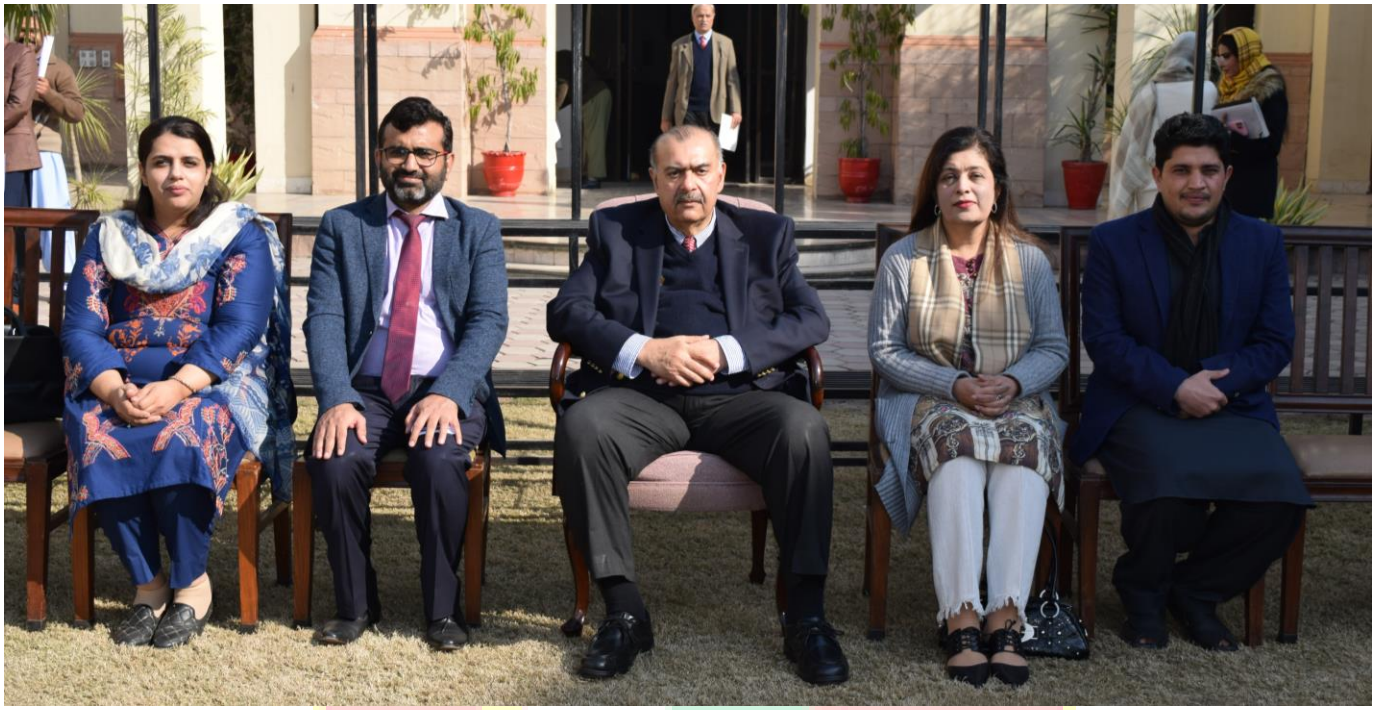

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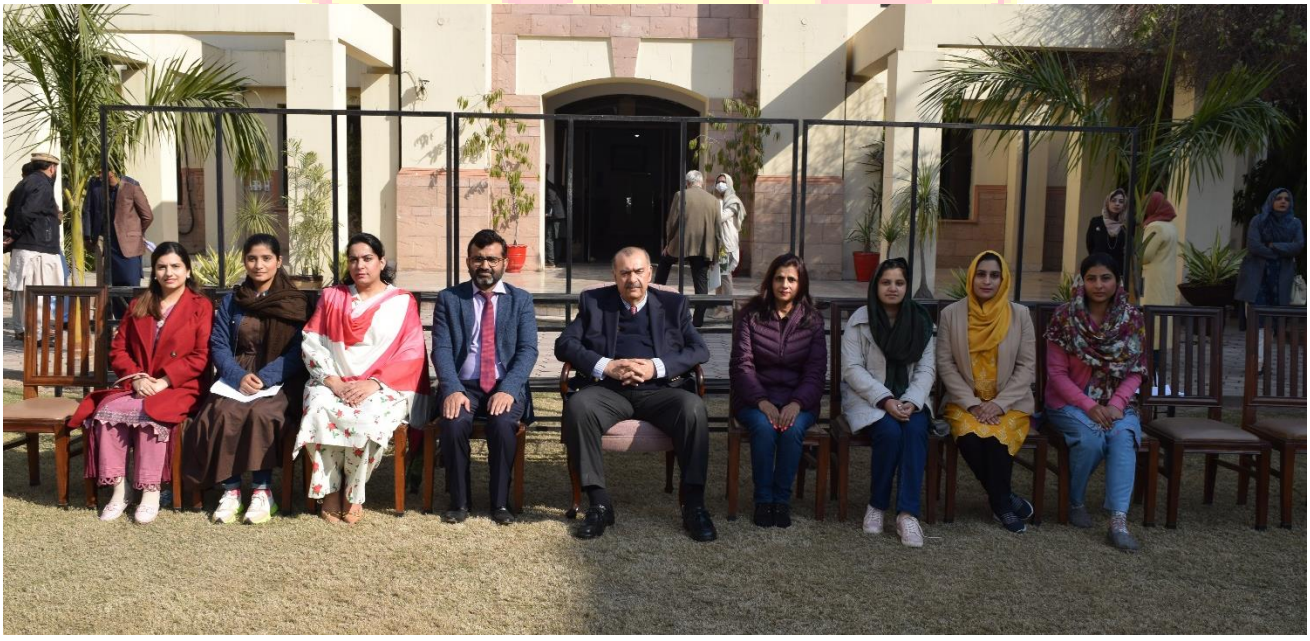

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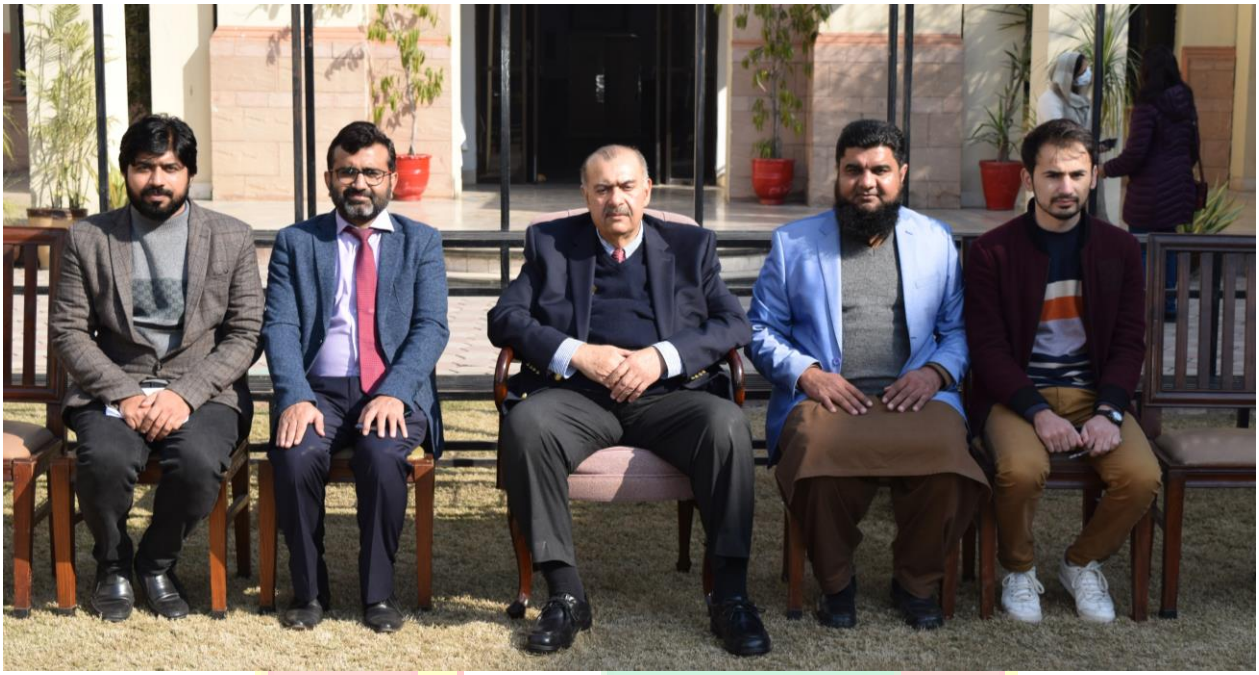

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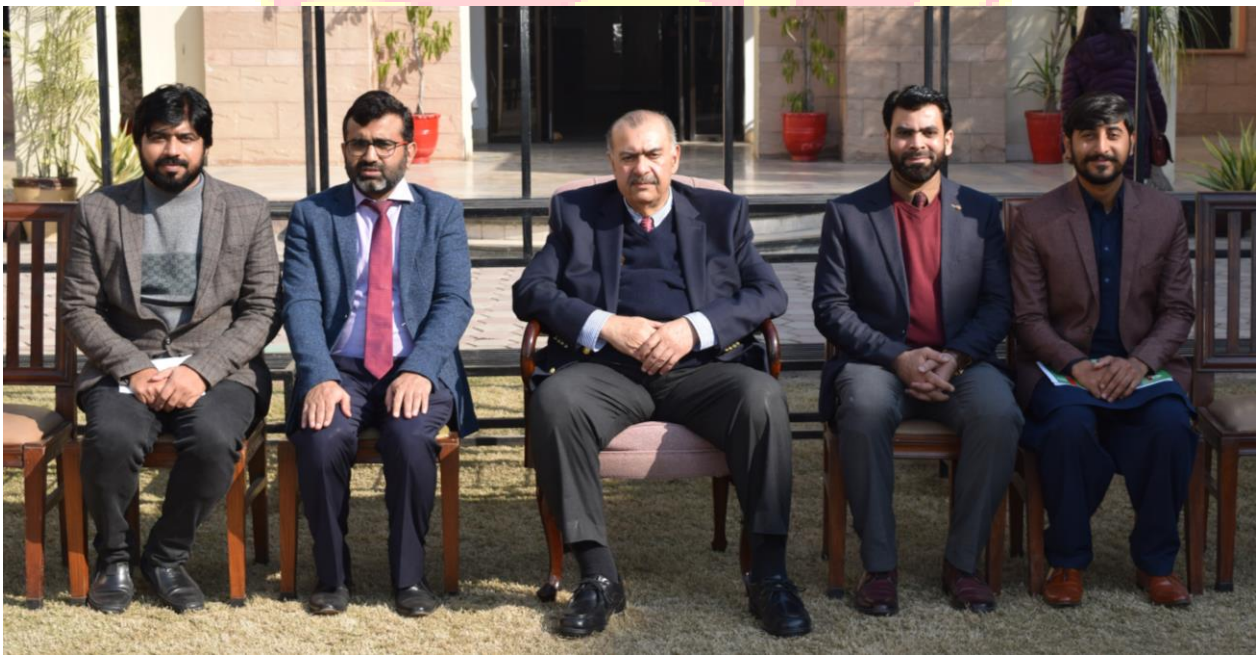

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22. Dr Uzma Zaidi

23. Col Dr Mehreen Ali Khan

Abstracts

Plenary Lecture:

Red Blood Cells Disorders and Bone Marrow Failure Syndromes

Inherited Bone Marrow Failure Syndrome

Prof. Dr Nisar Ahmed,

Congenital dyserythropoieyic anemias (CDAs) are a group of inherited refractory anemia characterized by infection erythropoiesis and erythroid multinuclearity (dyserythropoiesis). White cells and platelet count are normal with proportionally low reticulocyte count. The subtypes are CDA type I, II and III with distinct features. Typical clinical presentation is moderate anemia with jaundice and hepatosplenomegaly. Somatic manifestation like skin pigmentation and skeletal abnormalities may be evident. Diagnosis is by CBC, blood film, hemolysis marker (LDH and bilirubin) with bone marrow biopsy and molecular genetics. For management of any type, no major intervention can be done except hematopoietic stem cell transplantation. Supportive measures of treatment include folate supplementation, judicious red cell transplantation, iron chelation, interferons or splenectomy.

Management of Sickle Cell Disorders and Recent Advances

Dr Farrukh Shah,

Preliminary report on beta thalassemia major EMR in Punjab

Prof. Dr. Shabnam Bashir

No prevention program in the world can claim success until and unless baseline data for prevalence and incidence is available and a decline in these important parameters is documented over certain time.This is the first online thalassemia patient registry in Pakistan featuring real-time data entry, facilitates update and data reporting, and allows enrolled users to observe the aggregated data at any point of time. Secondly, precise micro mapping of thalassemia families in Punjab helps to provide the service of cascade or extended family screening and to identify potential candidates for prenatal diagnosis (PND). This uphill task of Electronic Medical Registry (EMR) was started with the help of PITB after taking approval from Punjab Health Department. The data obtained from the EMR from Jan 2020 to April 2021 is presented unravelling the current trend of thalassemia in Pakistan. This work provides a near comprehensive understanding of thalassemia in Punjab, Pakistan.

Initially a web-based software for EMR was developed with the help of experts from PITB in consultation with a notified team of PTPP experts, Pediatricians. The EMR registered all live patients diagnosed with transfusion dependent thalassemia, seeking treatment including blood transfusions from all Public Sector Hospitals and NGOs across Punjab.

All the Hematologists, Regional Coordinators, Field Monitoring Officers, Genetic Counsellors and Field Officers of PTPP participated in conducting registrations after having preliminary training from PITB experts. A survey was conducted by PTPP staff in all 36 districts of Punjab to identify the centers providing Blood transfusion and iron chelation to thalassemia major patients. A comprehensive list of all blood transfusing facilities, both public and NGOs was prepared and registration of patients done .at the end of total registration, completion certificate was obtained from in charge of that facility.

Genetic Modifiers in Beta Thalassemia and their Role in Phenotype Modulation

Dr. Maria Domenica

Recent Advanced in Treatment of Aplastic Anemia

Dr. Saqib Ansari

Aplastic anemia is a condition which leads to pancytopenia with hypocellularity(aplasia) of bone marrow. One cell line may be more affected than the rest. Aplastic anemia can be inherited or acquired. However not all pancytopenia are aplastic anemia differential diagnosis includes benign conditions like megaloblastic anemia, drugs, hypersplenism, SLE, disseminated TB, PNH, sepsis; malignant conditions involving bone marrow infiltration. Fanconi anemia is an inherited form of aplastic anemia which is not uncommon, but highly underdiagnosed in Pakistan. On the other hand, aplastic anemia can also be acquired due to viral infection, drugs, chemical or radiation exposure or it may have idiopathic causes.

Treatment modalities of acquired aplastic anemia include immune suppressive therapies like cyclosporine, ATG, these therapies work well in non-severe aplastic anemia in clinical practice. however, bone marrow transplant remains the main treatment for severe and very severe aplastic anemia till 40 years of age, particularly when match related bone marrow donors are available. In patients where immunosuppressant therapy is not effective and bone marrow transplant is not possible due to any reason then addition of eltrombopag in immunosuppressive therapy shows promising results.

Diseases like aplastic anemia have a major toll on the mental and physical wellbeing of the patients hence it is very important to counsel them regarding the prognosis and treatments

options. Encourage them to ask questions so they can better understand their condition. This will help them cope with the disease in the long run.

Oral Presentation
OP: 01

Association Between Genotype and Endocrine Complications in Pakistani Patients with Beta Thalassemia

Dr Ayesha Younas,

Co-Authors

Isma Imtiaz (MBBS), Ayisha Imran (MBBS, FCPS), Saadat Ali (PhD), N.A.Malik (MBBS,MPhil)

Objective:

To determine the association between genotype and endocrine complications in Pakistani patients with b Thalassemia.

Methods:

It was a cross sectional study conducted at Chughtai institute of Pathology from July 2022 to December 2022. Approval was obtained from the ethical and research committee of the institute. Total 50 patients, both males and females, diagnosed cases of transfusion dependent β Thalassemia, between age of 10-30 years were included in the study. Informed consent was obtained from all the patients. 3ml of blood sample, in two gel vials and two EDTA vials, each was taken at least after 2 days of last transfusion following an overnight fast. Fasting biochemical and hormonal assays were measured by chemiluminescence technology (using Alinity-ci, Abbott) and genotyping was done by the DNA sequencing technique (using Seq studio genetic analyzer). Patients below 10 years of age and those suffering from non-transfusion dependent thalassemia (NTDT) were excluded from the study.

Results:

Short stature, Hypogonadism, Hypoparathyroidism, Hypothyroidism and Diabetes Mellitus are the most frequently noted endocrine complications in our patients. Different thalassemia mutations noted include Fr 8/9 (+G), Fr 41- 42 -CTTT, IVS-I-5, G>C, IVS-I-I, G>T and Capsite +1, A>C, both as homozygous and heterozygous. Patients with homozygous mutations have more increased ferritin levels, as well as more endocrine complications.

Conclusion:

The genotype has a major role in determining the clinical severity of disease in thalassemia patients and thus predicting the risk of development of endocrine complications. Thalassemia patients with homozygous mutations need more strict monitoring for complications and chelation for serum ferritin control.

OP: 02

Frequency of Alpha Thalassemia (3.7 and 4.2 Gene Deletion) in Pregnant Women in Microcytic Hypochromic Anemias

Dr Imran Shahid,

Co Authors

Prof. Shabnum Bashir (MBBS, M. Phil Haematology), Dr. Muhammad Asif Naveed (MBBS, FCPS Haematology), Mr. Ghulam Mustafa (BSc Hons MLT, M. Phil MLS Haematotechnology), Prof. Shahida Mohsin (MBBS, FCPS Haematology),

Background:

An autosomal recessive condition known as alpha thalassemia is brought on by the absence or decreased production of alpha globin chains. The defining characteristic of alpha thalassemia is microcytic hypochromic anemia, and the degree of microcytosis is directly correlated with the number of deleted alpha genes. Alpha thalassemia disease during pregnancy increases the risk of pre-eclampsia, congestive heart failure, worsening anemia, and threatened miscarriages.

Study Objective:

We have designed this study to determine the frequency of alpha thalassemia (3.7 and 4.2 deletion) among pregnant women with microcytic hypochromic blood picture.

Study Design:

It was a descriptive study carried out at Sir Ganga Ram Hospital and the University of Health Sciences Lahore. The study included 190 pregnant women who had blood tests that showed microcytic hypochromic blood picture, as confirmed by CBC. These samples were then subjected to High Performance Liquid Chromatography (HPLC) and serum ferritin levels. Then, on probable cases of alpha thalassemia, GAP-PCR for 3.7 gene deletion and 4.2 gene deletion was carried out.

Results:

Among 190 pregnant mothers, 117 were found to have iron deficiency anemia and 20 had the β-thalassemia trait. IDA and β-thalassemia trait were present in 6 women. On 47 possible alpha thalassemia cases, GAP-PCR was carried out. Five of the patients had an alpha thalassemia gene deletion (3.7 gene deletion), but none of the patients had an alpha thalassemia gene deletion (4.2 gene deletion).

Conclusion:

Among pregnant women with a microcytic hypochromic blood pattern, the frequency of the 3.7 gene deletion associated with alpha thalassemia was 2.6%.

OP: 03

Diagnostic Utility of Bone Marrow Biopsy/Bone Marrow Culture in Patients with Pyrexia of Unknown Origin: A Ten-Year Retrospective Analysis

Dr Sehar Khaliq
Co-Authors
Dr. Haider Ali

Objective:
Patients with pyrexia of unknown origin (PUO) make up about 03% of the total hospital admissions. The diagnosis of PUO is based on extensive laboratory investigations and even after extensive testing still a large majority of patients remain undiagnosed. Bone marrow biopsy (BMB) and bone marrow culture (BMC) is done if the initial tests do not lead to any diagnostic clue. This study was carried out to assess the diagnostic utility of BMB and BMC in patients with PUO.

Methods:
This was an observational, cross-sectional study conducted at Fauji Foundation Hospital, Rawalpindi. The clinical, laboratory and radiological records from January 2012-January 2022 were retrieved from our hospital management information system. Data of 63 patients with PUO were analyzed according to Petersdorf criteria. Complete blood count was done on hematology analyzer XE 2100 and Sysmex XN 1000. BMB was stained with Leishman stain, bone marrow trephine biopsy was stained with hematoxylin and eosin stain. Bact Alert system was used for BMC.

Results:
Out of 63 patients with PUO BMB was diagnostic in only 25 (39.68%) patients. The leading cause of PUO was infectious disorders (mycobacterium tuberculosis, visceral leishmaniasis, malaria) followed by inflammatory disorders and hematological malignancies. In 38 (60.31%) patients BMB was not able to detect any underlying pathology. BMC showed growth in only 3 (4.76%) patients. Diagnostic yield of BMC was found to be very low.

Conclusion:
BMB is an important tool in establishing a diagnosis in patients with PUO. Infectious diseases is found to be the leading cause of PUO. However, bone marrow culture due to its very low yield is not justified as part of the routine initial evaluation of a patient with PUO.

OP: 04

Evaluation of the Combination Therapy of Hydroxyurea and Thalidomide in B-Thalassemia

Dr. Misbah Munir

Co-Authors

Iqra Ansari, Misbah Wasim, Naeem Abbas, Noor-un-Nisa Masqati

Objective:

This study aimed to evaluate the efficacy of combination therapy of HU and thalidomide in children with b- thalassemia.

Methods:

A single-arm nonrandomized trial was conducted at Children's Hospital Karachi (CHK; Karachi, Pakistan) from January 2020 to December 2020. Participants aged between 2 and 50 years of either sex presenting with clinical manifestation and genetic diagnosis of BTM and BTI were consecutively enrolled in the study.

Results:

A total of 135 patients (median age, 6 [interquartile range, 3-10] years), 77 (57%) males and 58 (43%) females, were followed first using HU alone, for 6 months, and then using the combination of HU and thalidomide for another 6 months. The primary outcome was a response to therapy, as measured by the number of transfusions required and Hb levels, for patients while receiving HU alone and then while using the combination therapy. Study findings showed a significant decline in blood transfusion volume ($P < .001$) and a significant increase in median Hb levels within 3 and 6 months of the combination therapy ($P < .001$). Eighty-nine (65.93%) participants were good responders, 16 (11.85%) were responders, and 30 (22.22%) were nonresponders, whereas the responders had variable genetic mutations. A total of 38 adverse events were reported that resolved on supportive treatment or temporary hold of the intervention.

Conclusion:

The combination therapy demonstrated promising results and could be considered for a diverse patient population with b-thalassemia.

Poster Presentation

PP: 01

A Rare Case of Type 3 Hereditary Hemochromatosis associated with Beta-Thalassemia Trait In an Adult Male

Dr Fatima Farhan

Co-Authors

Dr. Shanza Adnan (MBBS), Dr, M. Usman Sheikh (FCPS Hematology)

Objectives:

Type 3 Hereditary hemochromatosis is a rare inherited autosomal recessive disorder caused by mutation in TFR2 gene. HFE related hereditary hemochromatosis is more common in Caucasian population whereas non-HFE related hemochromatosis is quite rare in Asian-pacific region. Here we present a rare case of a 22-year-old male with Type 3 hereditary hemochromatosis associated with mutation in TFR2 gene.

Methods:

A 22-year-old male, resident of Swat with no known co-morbid presented to hematology clinic with the complaints of weakness, fatigue, loss of appetite, arthropathy, inability to gain weight for 3 years. Physical examination was unremarkable, and the patient was evaluated by endocrinology for hypogonadotropic hypogonadism. Routine hematological investigations revealed hypochromic microcytic red blood cell indices with Hb of 12.1g/dl and markedly elevated iron profile, hyper-ferritinemia with serum ferritin of 3160.1 ng/ml and elevated transferrin saturation of 107.03%. The liver profile was abnormal with elevated total, direct, indirect bilirubin, and AST.

Results:

No signs of hepatomegaly or cirrhosis were reported on abdominal ultrasound however fibroscan revealed F1 stage of liver fibrosis. Liver biopsy done as part of diagnostic workup revealed iron deposition in all the 3 zones along with septal fibrosis. Whole genome sequencing was done which showed homozygous strong variant of unknown significance in TFR2 gene. Additional findings of WGS revealed that the patient was also a carrier of beta-thalassemia and retinitis pigmentosa. The patient was kept on oral iron chelation therapy and been advised therapeutic phlebotomy at regular intervals and serial monitoring of serum ferritin levels till serum ferritin level is maintained at around 50ng/ml.

Conclusion:

The present case report is the first to identify a type 3 hereditary hemochromatosis associated with beta- thalassemia trait and retinitis pigmentosa in Pakistan. As up to 50 cases of type 3 hereditary hemochromatosis have been reported in the literature, most commonly in Italy, Japan and Portugal, this report can provide further evidence of the prevalence of type 3 hereditary hemochromatosis in Asia, particularly in Pakistan.

PP: 02

Effect of Malarial Infection on Haematological Parameters, A Study at Tertiary Care Hospital Lumhs Hyderabad / Jamshoro Sindh Pakistan

Dr Razia Asif

Co-Authors

Prof Dr Ikram Din Ujjan, Dr Ramsha Awan, Dr Kiran Aamir

Objectives:

To observe the effect of malarial infections on hematological parameters at tertiary care hospital LUMHS Hyderabad / Jamshoro Sindh Pakistan

Methods:

The descriptive case series study of six months was conducted at Liaquat University of Medical & Health Sciences Jamshoro. All the patients with >=01 year of age of either gender presented with fever and chills, headache were recruited in the study and explored for malaria parasite. The relevant patients had blood complete picture (CP), MP and immunochromatographic test (ICT) to evaluate the malaria and its pattern. The data was analyzed in SPSS 22, the frequency and percentage was calculated for categorical variables and mean ±SD was calculated for numerical variables. As this was descriptive case series so no statistical test of significance was applied.

Results:

During six months study period, total three thousand, five hundred and four (3504) patients were detected as malaria with means ± SD for age (yrs), WBC, hemoglobin and platelet was 57.99±10.93, 12,500±7.96, 9.87±5.52 (gm/dL) and 10,9000 ± 15.83 Respectively. Out of 3504, two thousand five hundred and fifty patients - 2550 (72.7%) were males and 954 (27.2%) were females. Plasmodium vivax are seen 1550 (44.2%), plasmodium vivax gametocyte 600 (17.1%), plasmodium vivax trophozoites are seen 830 (23.6%), trophozoites and schizonts of plasmodium vivax seen 200 (5.7%), plasmodium vivax gametocyte & rings are seen 250 (7.1%), trophozoites and schizonts of plasmodium vivax & gametocytes of plasmodium falciparum 74 (2.1%) is seen respectively. The anemia, leucocytosis, leucopenia, lymphocytosis, lymphopenia and thrombocytopenia were

observed in 74%, 55%, 27%, 37%, 17% and 80 % while among leukocytosis neutrophilia (55%), monocytosis (12%), eosinophilia (5%)

and basophilia (2%).

Conclusion:

The hematological changes are common complications encountered in malaria while the plasmodium infection is largely attributed to P. vivax but the P. falciparum is also prevalent.

PP: 03

Efficacy of Oral and Intramuscular Vitamin B12 in Early Response And Preferences of Patients

Shahzad Ali Jiskani

Co-Authors

Anam Shaikh (MBBS, M. Phil Pathology)Halar Rahim (MBBS, FCPS)

Objectives:

The main objective of our study was to assess the preferences of patients towards intramuscular injection or oral treatment of vitamin B12 supplementation, and to confirm the efficacy of both treatment options in patients.

Methods:

This was a prospective clinical trial, conducted at tertiary care hospital for a period of one year (June 2020 to May 2021). A total of 42 patients were selected for study. Patients were randomly and equally allocated to oral (21 patients) or intramuscular treatment groups (21 patients). In Group A, patients were given oral tablets of 1000µg cyanocobalamin, while in Group B, 1000µg hydroxocobalamin injections were given to patients. Samples of whole blood were extracted before starting of treatment, followed by 1, 2 and 4 weeks of treatment, and were analyzed for serum vitamin B12 levels. Before and after treatment, the patients were asked to fill questionnaire regarding preference of treatment options. SPSS 24.0. was used for analysis. A p-value of <0.05 was considered as statistically significant.

Results:

Among all patients, the mean age was found as 46.3±3 years with majority were including the

females (63.3%). In Group A, serum vitamin B12 levels were 155 pmol/L (range 144-181) and Group B, it was 161 pmol/L (range 149- 169). After 1 month of therapy, the level of serum vitamin B12 level was increased significantly in Group A (368; range 295-419) and Group B (2881 (range 1297-4418). Before starting of treatment, most of the preference was given to oral route of administration. Eight patients changed their opinion after therapy.

Conclusion:

There was significant difference in levels of vitamin B12 in both oral and intramuscular treatment groups. Due to obvious effect in response to treatment, the opinion of patients to select the routes of administration was also changed.

PP: 04

Prevalence Of Anemia in Pregnancy at Tertiary Care Hospital of Sindh

Dr Irfan Ahmed Bhatti

Co-Authors

Dr Kiran Aamir Associate Professor LUMHS Pathology Department Jamshoro Hyderabad

Objectives:

Anemia during pregnancy is a worldwide health problem affects around 500 million women during pregnancy Prevalence of anemia range from 5.4% to 80% in developed and developing countries respectively. Adverse effects of maternal anemia are well known and well documented on fetus as it potentiates risk of preterm labor, low birth weight babies and neonatal mortality. It also puts mothers at risk increasing maternal mortality and morbidity, antepartum and postpartum.

Methods:

It was a cross-sectional prospective study which was conducted at Gynaecology and Obstetrics Department of Liaquat University Hospital, Jamshoro, Hyderabad. Sampling technique was Non-probability convenient sampling. Duration of study was 6 months. 300 Pregnant females aged 3045 years and with parity up to 5 were enrolled in study after taking informed consent. Anemia was classified as macrocytic, microcytic and normocytic based on MCV. Fetal wellbeing was evaluated by serial abdominal ultrasound. WHO Grading for anemia was used to assess the severity of anemia.

Results:

258(86%) women were multiparous 42 were primigravida. 79% were in third trimester, 15% during second trimester and 6% in first trimester. Out of 300 patients 47% had mild (11gm %), 43% had moderate (7-9gm %) and 10% were having severe anemia with Hb<7gm%. 78% had microcytic hypochromic anemia, 12% had dimorphic pictures 12% had low RBC indices with increased red cell count so these were referred for HB electrophoresis to be screened for thalassemia trait. 58 % had monthly income of 2000-4000.78% had poor diet 22% were taking normal diet. 28% had used for preparation of iron and folate for variable period of time 1-4 months.72% never used hematinic. history of blood transfusion during pregnancy and Labor was present in 16%.

Conclusion:

Prevalence of anemia during pregnancy is high in our society. It can have significant impact on maternal and fetal outcome it is preventable and can be treated easily. Poverty and lack of education are the most important causes of anemia during pregnancy.

PP: 05

Spectrum of Haemoglobinopathies; A Tertiary Care Hospital Experience

Noorul Ain Fareed

Co-Authors

Ghulam Fatima

Objectives:

The aim of the present study was to evaluate the role of HPLC in the diagnosis of thalassemia syndromes/hemoglobinopathies

Methods:

The cross-sectional retrospective analysis was proceed in hematology deparment of CHK central laboratory, Dr Ruth KM PFAU hospital Karachi from 1st jan 2019 – 31 dec 2021. All suspected cases of hemoglobinopathy was included. Complete blood count is done on XN 1000 analyzer and then HPLC is performed on Arkray analyzer.

Results:

Out of 747 cases, 558 (74.6%) were normal and 189 (25.3%) cases had abnormal haemoglobin

pattern. 356 (47.6%) were males and 391 (52.3%) were females. Of all cases of Anaemia 278 (49.8%) were microcytic hypochromic, 22 (3.9%) macrocytic and the rest 258 (46.2%) had normocytic normochromic picture. Of the 189 abnormal cases, Spectrum of haemoglobinopathies prevalent were Beta Thalassemia trait 117(61.9%), followed by Beta thalassaemia major 27(14.2%). Other haemoglobinopathies in descending order of frequency were sickle cell disease 15 (7.9%), Hb D Disease 16 (8.4%), sickle cell trait 01 (0.5%), Sickle/beta thalassaemia in 02 (1.0%) and Hb E in 04(2.1%).

Conclusion:

Our study showed higher frequency of Beta Thalassaemia trait. It is suggested that detection of HbA2 should be carried out in all the high-risk groups with anaemia. Further larger studies are needed to screen our population to detect thalassaemia carrier state and Iron deficiency Anaemia.

PP: 06

To Evaluate Effect of Zinc and Copper in Aplastic Anemia Patient

Dr Ramsha Awan

Co-Authors

Prof.Dr. Ikram, Dr Razia Asif, Dr Kiran Aamir, Dr Arshi Naz

Objectives:

To evaluate effect of zinc and copper in Aplastic anemia patient versus comparative group

Methods:

All the AA diagnosed patients were selected including equal normal population as control. A structured proforma was used for collection of data. Investigation including CBC, Retic count, bone marrow biopsy was performed . Serum zinc and copper were measured on atomic absorption (Hitachi 7J0-8024).

Results:

In this study total 36 patients of aplastic anemia were studied to evaluate the serum trace elements level and 36 were taken as control .Mean age of patients was 18.13+22.25 years and controls were 22.24+5.95 years. Among patients mean Haemoglobin was 6.88±2.66 g/dl, WBC 2.63±1.76 x109/l and platelets was 27.02± 31.53 x109/l. Mean of the copper was 20.68±28.33 umol/l among patients, which was higher as compare to controls. Mean of the zinc was significantly decreased 10.52±29.49

umol/l among patients.

Conclusion:

It was concluded that serum trace element level as Zinc were markedly decreased, and serum copper were significant raised among aplastic anemia patient as compare to normal population.

PP: 07

Utility of Reticulocyte Parameters in Evaluation of Pancytopenia

Hamza Khan

Co-Authors

Fatima Meraj (MBBS, MCPS, FCPS), Neelum Mansoor (MBBS, FCPS), Mushkbar Fatima (research associate)

Objectives:

For the patients' rapid diagnosis and therapy, evaluating the etiology of pancytopenia is crucial. It is caused by a number of disease processes that either directly or indirectly affect the bone marrow. In many cases, reticulocyte count and its related indices are crucial for determining the source of pancytopenia. An important reticulocyte parameter is absolute reticulocyte count (ARC). The goal of this study is to assess the utility of ARC in diagnosing pancytopenia, which could prevent the need for invasive procedures and costly testing, ultimately reducing the diagnostic and therapeutic timeline.

Methods:

Study was done at Haematology department, Indus Hospital and Health Network, Karachi. Consecutive cases of first time pancytopenia presented during the months of October and November were included. Patients with incomplete clinical information or not having a diagnosis were not included. Sample size was 35 patients. CBC analysis and reticulocyte percentage was performed on patients, whole blood sample in EDTA-tube on Beckman Coulter DxH 900 automated analyzer. ARC was calculated using reticulocyte percentage and RBC count. Other relevant clinical information was obtained using online hospital management information system (HMIS). Cases were categorised into infective/sepsis, nutritional deficiency, aplastic anemia, hemolytic/bleeding and chronic disease. Data was analyzed by means of SPSS version 24.0. On the basis of normality, we reported median and Interquartile ranges (IQR).

Results:

The overall median age was 21 (IQR; 11-37) years. Among 35 patients, males were 45.7% (n=16) and females were 54.3% (n=19). Findings revealed that nutritional deficiency was the most common diagnosis followed by sepsis and bleeding. ARC values of Aplastic anemia was lowest without much variation, followed by nutritional deficiency and then sepsis.

Conclusion:

We conclude that ARC should be incorporated routinely in evaluation of pancytopenia, to rapidly classify the etiology and initiate management.

PP: 08

Frequency Determination of c.1115_1118delTTGG and c.3788_3790delTCT FANCA Gene Mutation in Local Fanconi Anaemia Population

Dr Kinza Ayaz

Co-Authors

Dr Tariq Masood (MBBS, PhD), Dr Abid Sohail Taj (MBBS, PhD)

Objectives:

Fanconi's anaemia (FA) an autosomal recessive inherited aplastic anaemia (AA), is characterized by hypo cellular bone marrow with various somatic abnormalities as well as hypersensitivity of cells to DNA crosslinking agents, increased vulnerability to AML, myelodysplasia and solid tumors. FA results from genetic mutations in at least 19 genes responsible for DNA repair. FANCA gene mutations accounts for 60%–70% of cases of FA, two most commonly reported FANCA gene mutations in Exon 13 and Exon 38 can be used for diagnosis of Fanconi's anaemia.

Methods:

ARMS PCR was established for Exon 13 mutation c.1115_1118delTTGG. Sanger sequencing was used to confirm the ARMS PCR results for Exon 13 and finding exon 38 mutation of FANCA gene (c.3788_3790delTCT).

Results:

ARMS PCR results from all samples, revealed that none of them had Exon 13 mutation. Sanger

sequencing results analyzed on Bio edit sequence aligner software confirmed the results of PCR. In addition none of the samples had Exon 38 mutation.

Four SNPs were found on Sanger sequencing. Two of them were in intron 12 region, one in Exon 13 and Exon 38 each. The SNPs were analyzed on multiple Variation databases.

Conclusion:

Results shows that mutations in Exon 13 and Exon 38 of FANCA gene are uncommon in our Pakistani FA population. SNPs established in Pakistani population of province Khyber Pakhtunkhwa (KPK) have not been reported prior to this. Further studies are required to establish the common mutations in our population to improve diagnostics and management of such cases of hereditary aplastic anaemia.

PP: 09

H Pylori-Induced Pernicious Anaemia, A Case Report

Maria Owais

Co-Authors

Dr. Bushra Moiz

Objectives:

Pernicious anemia is a rare and complex multifactorial illness associated with familial and autoimmune conditions. Here we report a case of Helicobacter pylori as a risk factor for the development of pernicious anemia in a patient.

Methods:

A 48-year-old male presented with the shortness of breath, difficulty in performing daily activities. Past history was significant for dyspepsia, severe weight loss of over 10 kg, and post-prandial vomiting for the last six months. Patient had already received multiple injections of vitamin B 12 and red cell transfusions from an outside hospital. CBC showed haemoglobin8.8 g/dl, MCV 102.7 fl, MCH 33.7 pg, white blood cells 5.2X109/L and platelets 302X109/L. The peripheral smear showed anisopoikilocytosis, polychromasia with macrocytosis and teardrop cells. His vitamin B-12 level was low, serum homocysteine 15.9 umol/L and free t4 level at 0.31 ng/dL. Endoscopy showed mild corpus gastritis and atrophic mild duodenitis and biopsy showed moderate chronic active Helicobacter pylori-associated gastritis. Intrinsic factor antibody was positive.

Results:

Final diagnosis was pernicious anemia and hypothyroidism most probably secondary to H pylori infection. The patient showed improvement following antibiotic course for Helicobacter pylori and parenteral vitamin B-12 injections. The patient was also referred to endocrinology clinic for the management of hypothyroidism.

Conclusion:

H pylori causes chronic gastritis and subsequent gastric atrophy resulting in reduced availability of intrinsic factor required for vitamin B 12 absorption. However, through molecular mimicry, autoantibodies can develop in a susceptible person against intrinsic factor and prompt treatment for infection and pernicious anemia can improve the clinical condition.

PP: 10

Identification of Optimal Thalassemia Carrier Screening Strategies in The Setting of Limited Public Sector Resources

Dr Maliha Sumbul

Co-Authors

Dr Maria Ali, Dr Muhammad Nadeem

Objectives:

To identify Optimal Thalassemia Carrier Screening Strategies in the setting of limited public sector resources.

Methods:

Study design: Cross sectional/Observational

Setting: Pathology Department, National Institute Of Cardiovascular Diseases, Karachi.

Sample size/Study Duration:147 staff voluntarily participated in CBC screening camp at NICVD on 23rd June 2022.

Sampling Method: Venous samples for CBC were collected in EDTA tubes and run on ABACUS380/HORIBA ES60 analyzers. Subjects with hypochromic microcytic indices were further selected for serum ferritin and hemoglobinopathy screening by HPLC method on fresh samples in red top (ABBOTT Alinity) and EDTA top (H9 HPLC Analyzer) respectively. Anemic subjects with macrocytosis and those who did not give fresh sample were excluded. Informed consent was taken

from all the participants.

Results:

Total 147 staff participated in screening, 120(81%) males and 27(19%) females, with mean age of 38.8 ± 9.9 years. Mean hemoglobin was 13.1 gm/dl ± 1.5. Out of total, 111(75%) had normal CBC and 9(6%) were excluded from study. Remaining 27(19%) cases with hypochromic microcytic rbc indices were further tested for haemoglobinopathy and serum ferritin. Screening revealed 4.1% with carrier status, 5(3.4%) with Beta thalassemia minor and 1(0.7%) HbD trait.

Ferritin(ng/ml) performed on 27 participants:4(2.7%) <10, 13(8.8%)11-50, 5(3.4%) 50-100 and 5(3.4%) >100.

Conclusion:

Haemoglobinopathy prevalence in study population reflects general Pakistani population. Ferritin depicting iron stores is significantly low, in both genders, showing poor nutritional status of the Pakistani community Thalassemia, a major public health concern, is preventable with effective screening. Serious efforts to create Thalassemia and Nutritional deficiency preventive measures with Public/Private partnership is the ultimate answer in a financially restrained country.

PP: 11

Prevalence and Longevity of SARS-COVID 2 (IgG Antibodies) in Covid 19 Patients, A Longitudinal Study

Dr Maria Mehmood

Objectives:

- To determine the prevalance of SARS-COV2 IgG antibodies in COVID-19 patients
- To serially determine the antibodies titer level (IgG) of covid 19 patients up to 6 months

Methods:

Indirect manual ELISA technique for IgG ANTIBODIES of covid 19.

Results:

Total of 66 patients of COVID-19 PCR positive patients were followed up for 6 months. In which

males were 40 (60.6%) and females were 26 (39.4%).The age range was 18-64 years with a mean age of 36.89 ±12.89 years.The mean age of the male participants was 34.23 ±11.81 years and that of females was 41.0 ±13.63 years. Patients were divided into five age groups.The majority of the patients 37(56.1%) were in the age group 26-35 years. In our study 65 (98.5%) had COVID-19 PCR positive while only 1(1.5%) was diagnosed via High Resolution Computed Tomography (HRCT). The majority of our patients presented with fever (%), flu , cough (%), followed by body aches (%), shortness of breath (%), and sore throat (%). The mean IgG levels on day 15 were 9.76 ±7.4, which increased to 17.90 ±6.68 on day 30th. Furthermore, it increased in the 2nd month to 22.54 ±6.79 and 27.46±7.52 in the 3rd month. Then it remain static on the 4th and 5th month with 26.20 ±7.12, 26.20 ±8.12 respectively. On the 6th month it came down to 20.37 ±8.43. In our study IgG level were divided into two groups (positive and negative according to the cutoff values). On day 15th post COVID infection 39 (59.1%) were positive. After one month and 2nd month 65 (98.5%) were positive. On third month and fourth month all patients were positive. On fifth month, one patient's antibodies had become negative and on the 6th month, 3 patients had negative antibodies

Conclusion:

Our study showed that a sustained and prolonged positive immune response in COVID-19 recovered patients. The consistent rise in antibody and positive levels of IgG titers within the first 4 months suggest that immunization is possible. There was a constant rise in the antibodies level from 1st month to 5th month and decline in the antibodies was noted in the 6th month. It shows that a person can be immune to infection in the first 6 months.

PP: 12

Seroprevalence of SARS-COV-2 in Children of School-Going Age in District Swabi, Khyber Pakhtunkhwa, Pakistan

Muhammad Arif

Co-Authors

Dr Yasar Yousafzai (PhD, Hematology)

Objectives:

To determine seroprevalence of SARS COV-2 in children of school going age in District Swabi

Methods:

We used ELISA to test for the presence of antibodies, IgM and IgG, in blood samples collected from 246 children of school-going age (5-16 years old) selected randomly from the district of

Swabi, Pakistan. This study was approved by Khyber Medical University, Peshawar, Ethical Board, and Advanced Studies Review Board. Data was collected on a purposefully built questionnaire.

Results:

Overall, 2.0% of our participants were seropositive for IgM, whereas 23.1% were seropositive for IgG. Older age,female gender, and contact history were significantly associated with higher seropositivity. Symptoms associatedwith seropositivity were: fever (98.0%), cough (90.0%), sore throat (79.0%), coryza (68.0%), myalgia (61.0%), lossof sense of smell and taste (49.0%), and vomiting or diarrhea (8.0%). Although 77.6% of our IgG seropositive participants recalled experiencing flu-like symptoms, none of the participants in this study had visited the doctor or were tested for SARS-COV-2. We found IgG titers to be significantly higher in symptomatic children.

Conclusion:

The number of undiagnosed infections in children may be substantially larger than the official accounts. Sparse data is available regarding coronavirus disease in children, particularly in low-middle income countries (LMIC). . The most frequently symptoms were fever, cough, sore throat, coreza, mylgia, loss of sense of smell and taste and lastly vomiting and diarrhea. Serological studies provide valuable insight into the immunological status of a population and can prove vital when considering future strategies.

PP: 13

Significance of Glycosylated Hemoglobin in Different Hemoglobinopathies

Hamzullah Khan

Co-Authors

Huma Riaz, Shahataj khan

Objectives:

To determine the significance of glycosylated hemoglobin (Hba1c) in different hemoglobinopathies, using High Performance Liquid Chromatography (HPLC).

Methods:

Glycosylated hemoglobin was measure with high performance liquid chromatography (HPLC) in

151 patients referred for Hb-studies irrespective of age and gender in department of Pathology Hayatabad medical complex Peshawar from Jan 2022 to 30th May 2022. All cases where P2 values were >6.5% were excluded from the study to avoid biased in the data.

Results:

Out of 151 patients 75(49.7%) males and 76(50.3%) females. The median age of patients was 11 years with minimum age of 6months to 47 years with range of 47.8years. The mean Glycosylated hemoglobin was lower in Beta Thalassemia Major than normal, Beta Thalassemia Minor, sickle cell disease ($p<0.001$, $p<0.001$, $p=0.003$ respectively). However, there was no statistically significant difference in mean values of Hba1c of Normal with beta Thalassemia trait, sickle cell disease and sickle cell trait ($p<0.69$, $p<0.98$respectively). There were significantly higher values of mean HbA2 values (BTT) in female gender as compared to male ($p=0.054$). There was a significant association of female gender with BTT and male with BTM ($p=0.03$). Furthermore, Hba1c has a mild positive statistically significant correlation with Hb A2 ($r=0.173$, $p<0.03$) and highly significant, inverse correlation with HbF ($r=0.308$, $p<0.001$).

Conclusion:

Glycosylated hemoglobin (Hba1c) could be clinically useful in discriminating different hemoglobinopathies and to predict thalassemia in early age groups. Hba1c has positive correlation with HbA2 and a negative correlation with HbF. Proportionally female gender is more prone for acquiring BTT while male gender for BTM. Further studies are needed on larger population with high prevalence of hemoglobinopathies to test the significance of the HbA1c.

PP: 14

Polycythemia vera with Metastatic adenocarcinoma in Bone marrow of a 68-year-old male

Dr Umera Saleem

Co-Authors

Hamza Tariq, Farwa Komal, Hajrah Syndeed, Muhammad Samiullah

Abstract:

The co-occurrence of polycythemia vera (PV) and metastatic adenocarcinoma in bone marrow is rare. The present case study describes a PV in association with metastatic carcinoma in the bone marrow. Magnetic resonance imaging (MRI) pelvis (for hip joints) revealed suspicious bone marrow changes in the lumbosacral spine. The bone marrow biopsy indicated hyperplastic

trilineage hematopoiesis along with non-hemopoietic cells. The findings of immunohistochemistry on the trephine biopsy sample indicated the gastrointestinal origin of metastatic non-hematopoietic cells. The present study may help in the future management of patients with polycythemia vera and metastatic adenocarcinoma.

OP: 15

Eltrombopag and Cyclosporine Combination Efficacy for PediatricPatients with Aplastic Anemia

Dr Naeem Abbas

Co Authors

Saqib Hussain Ansari MBBS, DCH, DPGN, DipRCPath, PhD; Misbah Wasim MBBS, FCPS; Iqra Ansari MBBS, MPH; and Noor-un-Nisa Masqati MBBS, FCPS

Objective:

The objective of the study was to evaluate the efficacy of the combination therapy of cyclosporine and eltrombopag in children with AA and to report its experience at a single tertiary care center

Methods:

A retrospective analysis of 32 biopsy-proven AA cases was conducted for patients who presented to the Children'sHospital Karachi between 2018 and 2021. The patients who were not responding to the standard immunosuppressive therapy were offered eltrombopag as an adjunct therapy for a minimum of six months. Children of either sex presenting with clinical manifestation and bone marrow biopsy diagnostic of AA who showed little to no improvement on cyclosporine-only therapy were enrolled in the study. The outcome was assessed on the improvement and maintenance of hemoglobin levels above 8g/dl and platelet counts above 30,000.

Results:

Of 32 patients, the median age of the patients was 14.5 (11.0-18.8) years. There were 19 (59.4%) males and 13 (40.6%) females. Moderate severity was observed in 3 (9.4%), severe in 5 (15.6%), and very severe in 24 (75.0%)patients. Platelet transfusion was observed in 17 (53.1%) patients whereas 20 (62.5%) patients had packed red cell transfusion at baseline. A significant increase in the median hemoglobin level (p-value <0.001), platelet counts(p-value <0.001), and TLC count (p-value 0.002) was observed over 6 months period. Response to the therapy was observed in 25 (78.13%) patients. Of the 7 non-responders, 5 patients died.

Conclusion:

Eltrombopag should be considered as an adjunct therapy to cyclosporine in aplastic anemia.

OP: 16

Infiltration of Round Blue Cell Tumors in Bone Marrow

Dr Zahra

Co-Authors

Brig Hamid

Objective:

To identify the round blue cell tumors and their pattern of infiltration

Methods:

A total of 60 newly diagnosed cases of round blue cell tumors were included in this and patients having Acute Lymphoblastic Leukemia (ALL) were excluded. Findings of peripheral film, clinical findings, frequency and pattern of marrow infiltration of different Round Blue cell tumors were noted. The data was analyzed on SPSS version 23.

Results:

Our study showed 40(66.6%) males and 20(33.3%) were females with male to female ratio of 2:1. Total mean of age was 5.69±5.0years. Out of 60 cases, 32(53.3%) were of Retinoblastoma followed by 19(31.7%) cases of Neuroblastoma, 8(13.3%) of Ewing sarcoma and 1(1.7%) of Rhabdomyosarcoma. 3(9.37%) cases of Retinoblastoma showed infiltration ,2(10.52%) cases of Neuroblastoma while Ewing sarcoma and Rhabdomyosarcoma showed no infiltration. On IHC Retinoblastoma and Neuroblastoma showed positivity for Synaptophysin and Chromogranin and S100 was positive in Neuroblastoma infiltrate and negative in Retinoblastoma. Pattern of infiltration observed in cases of Retinoblastoma was diffuse while in Neuroblastoma focal and interstitial pattern of infiltration observed on trephine biopsy.

Conclusion:

Bone marrow infiltration was observed in 5 (8.33%) cases of small round blue cell tumors. Early diagnosis of these tumors implicates the appropriate treatment and neoadjuvant chemotherapy in advanced cases.

White Blood Cells Disorders

New Investigational Combination for High Risk MDS

Dr. Abbas Khokhar

Myelodysplastic syndromes (MDS) are typically a hematologic malignancy of older adults characterized by dysplastic hematopoiesis, cytopenia(s), and risk of acute myeloid leukemia trans formation. The treatment approach to MDS depends largely on risk stratification of an individual' s disease, most commonly using the Revised International Prognostic Scoring System, which takes into account peripheral blood cytopenias and bone mar row blast per cent age and cytogenetics. The current standard of care for patients with higher - risk MDS (HR - MDS) includes hypomethylating agents (HMAs), decitabine and azacitidine, and allogenic stem cell trans plant for patients able to undergo this therapy. However, leukemic transformation remains a significant challenge, and out comes with these current therapies are still dismal.

There are several novel therapies in development aiming to improve upon the outcomes of single - agent HMA therapy using combination strategies with HMAs. HR-MDS is a devastating malignancy that currently has a paucity of treatment options. However, there is now a growing armamentarium for MDS therapy with multiple promising combinations in late stages of development. Still, these investigational therapies, including CPX-351 for MDS, require further investigation with longer study follow up, future randomized trials with larger sample sizes, survival correlation, and determination of response signals among disease subsets. As our understanding of the molecular pathogenesis of MDS improves and our treatment options expand, we anticipate providing effective therapies for our patients with HR-MDS that improve both quality of life and survival.

Disorders of Monocytes

Prof. Aaron Han

Monocytes are important immune mediator cells. They can be readily measured by automated hematology instruments. Benign and malignant monocyte disorders can be distinguished using a multimodal approach. We examine the differential diagnosis of monocytosis. Inflammatory disorders associated with monocytosis are discussed. Ability to distinguish reactive and neoplastic monocytes are shown in representative images. The unique role of monocytes and entities associated with COVID are discussed. This includes hemophagocytic syndrome, and also research on monocyte parameters and correlation with COVID disease severity.

Update on Management of Acute Lymphoblastic Leukemia

Prof. Mary Taj

Acute Lymphoblastic Leukemia (ALL) is a success story of childhood cancer. From a survival rate of around 20% in the 7O's, 85-90% of children are cured today. Over time, prognostic markers have been identified, which have allowed us to tailor intensity of treatment according to the risk of relapse. A combination of MRD (minimal residual disease) and cytogenetics are used to divide patients into risk groups that form the basis of current ALL protocols. Using this stratification, standard risk patients have a EFS of over 90% and efforts are being made to reduce the intensity of treatment in this group of patients. For the small group of patients at high risk of relapse allogenic stem cell transplant and more recently CAR-T cells are offered at an earlier stage. In the higher risk group and relapsed/refractory patients targeted therapies like Blinatumomab have reduced the toxicity of second line chemotherapies.

The results in adult patients, though improving are not quite so good due to many factors including greater toxicity in older patients and more patients with high-risk cytogenetics. However, currently pediatric protocols are being used in young adult patients and showing a improvement in survival as compared to adult protocols. The results of recent trials in this group of patients will be presented.

CLL: Treatment Options and Recent Updates with Focus on BTKi

Dr Khurram Tariq

CLL or chronic lymphocytic leukemia impacts a significant number of nations worldwide predominantly affecting older patients with a median age at diagnosis of 72-years-old. CLL represents about 1/3 of all leukemias worldwide. It is the most common leukemia in the western hemisfair. Men are twice as likely to develop CLL than women. While 80% of patients are asymptomatic at the time of diagnosis and do not really need treatment, there is a significant number of patients who develop a manifestation of Chronic Lymphocytic Leukemia and require treatment.

The treatment landscape has significantly evolved over since the 1950, when as a community we used to treat CLL with prednisone to February of 2023 when a host of multiple treatment options have been validated through research over the last several decades. Treatment options are based on multiple different factors including age, genetic mutations and deletions, patient's preference, availability of drugs and on the basis of toxicities associated with these options. My talk will focus on the use of BTK inhibitors for the management of chronic lymphocytic leukemia, which

represents a new class of drugs that has revolutionized the management of CLL in the modern era. We will discuss different phase III clinical trials and how their results have impacted the management of CLL in the modern era. I appreciate your time as I go over all these recent developments with you.

Advancements in the Management of AML: Where do We Stand?

Prof. Dr Usman Sheikh

Acute myeloid leukemia (AML) constitutes 80-90% of cases in adults. Mean age at presentation is 55 years and incidence increase with age. Remission rate of 50-70% can be achieved with current cytotoxic therapies however, the majority of AML patients relapsed, and the long-term prognosis is very poor. Approximately 15-20% patients are the long-term survivors. These figures are derived from studies conducted in Pakistan whereas there is marked improvement in outcome in patients with AML from North America and Western Europe.

Substantial research advancement especially at the genes level to understand the pathogenesis and improving the therapeutic options for AML patients is happening at a speedy rate. Historically, since 1970's cytarabine with anthracycline combination is the cornerstone for the management phase of induction therapy followed by intermediate to high dose cytosar as consolidation. However, recently in acute promyelocytic, although approximately 10% of the total AML, all trans-retinoic acid (ATRA) and arsenic trioxide achieved 80-90% long term survival. Similarly, with the addition of gemtuzumab resulted in 75% cure rate in core binding factor AML. In recent past, AML in elderly carries a dismal outcome with a survival of few weeks. Now with the introduction of hypomethylating agents and venetoclax the scenario has completely changed with a very good survival advantage. In addition, many molecular targets are now available which includes FLT3, IDH1, IDH2 and TP53. In the past, maintainace therapy was unknown in AML, but now it is an important component of management. Oral decitabine and oral azacytidine are recently introduced to replace parenteral medications.

Oral Presentation
OP: 01

Data Visualization and CBC-based Morphometric Parameters: Revealing a New Diagnostic Tale for Acute Promyelocytic Leukemia

Dr Sidra Izhar

Co-Authors

Miss Saima Aziz (M.Phil), Dr Rana Zeeshan Haider (PhD .Post Doc)

Objectives:

We hypothesized that deviational trends (patterns) among routinely generated diagnostic data particularly morphological and immature fraction-related parameters produced during routine complete blood count (CBC) testing might fuel early-pre-microscopic flagging of APML from related hematological neoplasms. Modern data visualization (DV) tools along with supervised machine learning (ML) algorithms were applied on routine and morphometric CBC parameters.

Methods:

Modern data visualization (DV) tools along with supervised machine learning (ML) algorithms were applied on routine and morphometric CBC parameters. Furthermore, the independent contribution of each study parameter was also revealed to make lucid by calling automatic linear regression predictive modeling.

Results:

In results worth discussing points including higher values (hot spots) against values of NE-SFL for APML while LY-X for related AMLs were noted. In contrast other study groups presented hot spots for IPF, LY-Z, MO-Y, and all differential leucocytes scattering area distribution width-related parameters.

Conclusion:

The diagnostic stuff by using it as a template/reference can have a holistic view for pre-microscopic flagging of hematological emergencies not limited to APML.

OP: 02

Comparison of MTHFR C677T and A1298C Genetic Polymorphism in Chronic Myeloid Leukemia and Normal Healthy Individuals

Dr Afshan Amir

Co-Authors

Dr. Nazish Mazari (MBBS, FCPS), Ms. Madiha Shakoor (PhD Scholar) Mr. Ghulam Mustafa (M. Phil), Mr. Muhammad Ramzan (M. Phil) Dr. Muhammad Asif Naveed (MBBS, FCPS, PhD)

Objectives:

The current study was designed to compare MTHFR gene polymorphism in CML patients and normal healthy individuals.

Methods:

A cross-sectional comparative analysis was conducted. A total of 116 peripheral blood samples were obtained for this investigation, of which 58 were obtained from CML patients who had received a diagnosis and 58 from healthy individuals. After the Ethical Review Committee gave its consent, these samples were taken from Jinnah Hospital in Lahore. Following a complete blood count, DNA was extracted using the phenol chloroform technique from EDTA blood samples. Following extraction, the DNA was amplified using the PCR technique. Through the use of restriction fragment length polymorphism (RFLP) techniques, the MTHFR gene genotyping was confirmed using the PCR product.

Results:

According to the findings of the current investigation, the C677T TT genotype was somewhat more common in CML patients than in healthy controls, although the difference was not statistically significant (P = 0.480). According to the A1298C CC genotype, CML patients also had higher amounts of this genotype than did healthy individuals, however the difference was statistically insignificant (P = 0.949).

Conclusion:

In the current study, we concluded that both MTHFR genetic polymorphisms C677T and A1298C showed no statistically significant difference in CML cases when compared with normal healthy individuals.

OP: 03

Association Between Cytogenetic Findings and Post Induction Minimal Residual Disease in Childhood B-Lymphoblastic Leukemia

Esha Farooq

Objectives:
The study aimed to determine the frequency of cytogenetic abnormalities in childhood B-ALL and their association with post induction MRD.

Methods:
This is a retrospective study conducted at the Indus Hospital and Health Network from January 2022 to June 2022. All newly diagnosed cases of B-ALL (age 1-17 years) in whom cytogenetic studies and post induction MRD were performed are collected. Cytogenetic done using G-banding on automated imaging system. Post-induction MRD was determined by 8-color flowcytometry

Results:
This is a retrospective study conducted at the Indus Hospital and Health Network from January 2022 to June 2022. All newly diagnosed cases of B-ALL (age 1-17 years) in whom cytogenetic studies and post induction MRD were performed are collected. Cytogenetic done using G-banding on automated imaging system. Post-induction MRD was determined by 8-color flowcytometry

Conclusion:
Hyperdiploidy found to be most frequent cytogenetic aberration in childhood B-ALL. The association of MRD was found to be insignificant with cytogenetic aberrations on FISH and karyotyping.

OP: 04

Characterization of Acute Promyelocytic Leukaemia: Follow Up Study at A Tertiary Care Center

Dr Maymoona Suhail

Co-Authors

Hamid Saeed Malik, Rafia Mahmood, Ayesha Khurshid

Objectives:

To categorize APL on morphology and molecular characteristics and correlate with response to treatment.

Methods:

This is a prospective study performed at Haematology Dept, AFIP from Jan 2019 till date. All patients who were newly diagnosed as Acute Promyelocytic Leukaemia were included and followed up till date.

Results:

Newly diagnosed 123 APL patients with male to female ratio of 2.7:1 were included. 25 (20.3%) patients were <18 years of age with median age of 7yrs and 98 (79.7%) patients were >18 years of age with a median age of 39yrs. Major presenting complaint was fever seen in 114 (92.7%).Physical examination revealed bruising in 41 (33.3%) patients. On bone marrow examination 111 (90.2%) patients had hypergranular variant while 12 (9.8%) had hypogranular variant at diagnosis. PML::RARA was found in 110 (89.4%) patients with majority having BCR 1 isoform (41.5%). 9 (7.3%) patients showed additional molecular abnormalities including NPM 1, FLT 3-ITD or both and WT1. Additional cytogenetic abnormalities including del7q, i(17q), del 9q and tetra ploidy was found in 11 (8.9%) patients.18 (14.6%) patients lost to follow up while 13 (10.5%) died before start of induction therapy. 23 patients received ATRA-IDA therapy and 69 received ATRA-ATO. On post induction bone marrow biopsy 77 (90.6%) patients showed morphological remission.

Conclusion:

Similar to the success story of CML, the amazing journey of molecular and cytogenetics of APL has revolutionized its early diagnosis and treatment. This has paved the way in which cancer should be diagnosed and molecularly targeted.

OP: 05

Clinicohematoligical Characteristics and Cytogenetic Profile of Chronic Myelomonocytic Leukemia; An Experience from Pakistan

Zoya Ziad

Co-Authors

Naveena Fatima (MSPH), Aisha Jamal (FCPS), Qurat-Ul-Ain Rizvi (FCPS), Anum Khalid (Mphil), Laraib Majeed (BSc), Nida Anwar (FCPS)

Objectives:

The aim of the study was to study baseline clinicohematological characteristics, and cytogenetics profile of this disorder in our population.

Methods:

A cross sectional study was conducted at National Institute of Blood Diseases and Bone Marrow Transplantation, Karachi Pakistan from 2018-2021. Approval from the Institutional ethics committee was obtained prior to the study. Baseline investigations were done and clinical parameters were recorded. Bone marrow biopsy samples were taken and stained by leishman's stain. Cytogenetic analysis was performed on overnight, 24-h un-stimulated and 72-h stimulated bone marrow cultures using standard procedures. Descriptive statistics were reported by using SPSS version 23.

Results:

A total of 18 patients were included with male predominance 11(61%). Out of 18, 6(33%) had known comorbids, 5(28%) had hepatomegaly, and 11(61%) had splenomegaly. Symptoms at presentation included fever 10(56%) followed by weight loss 9(50%). The duration of symptoms before presentation was 8 (2-192) weeks. Transfusion dependent anemia at presentation was found in 14(78%) of patients. Out of 18, 16(89%) had normal karyotype. Median (range) hemoglobin (g/dl), platelet countx109/L, total leucocyte count x109/, monocytes x109/ and blast (%) was 9.3(5.7-14.2), 2(2-249), 35.2(3.4-145.8), 6.5(1.3-26.1) and 6(1-19) respectively. Out of total, 10 (56%) were alive.

Conclusion:

This was one of the first studies conducted on CMML Pakistani patients. The range duration of symptoms before presentation was found much longer which might represent delayed referrals. Routine follow ups and clinical treatment data would be important addition to the existing data done prospectively. Further longitudinal studies with inferential statistics are needed in this context.

OP: 06

Development of Real Time Quantitative PCR for Detection and Monitoring of BCR-ABL p190 Transcript in Acute Lymphoblastic Leukemia Patients

Dr Gulshan Munir

Objectives:

To design RT quantitative PCR assay for detection and monitoring of BCR-ABL p190 transcript in acute lymphoblastic leukemia patients. To optimize and validate RT quantitative PCR assay for detection and monitoring of BCR-ABL p190 transcript in acute lymphoblastic leukemia patients.

Methods:

The real time qPCR optimization for detection of BCR-ABL mutation in Acute Lymphoblastic Leukemia patients, included varying cycle number and primer concentration with standardization of real time qPCR generation and number and analyses to improve data sensitivity. The right amount of cDNA was added to the analysis in order to construct the standard curve and achieve absolute quantification of the samples. In the cDNA synthesis procedure, RNA was collected from peripheral blood sample and checked by Nano drop. The Nano drop RNA method is used to determine both the quality and quantity of nucleic acid present in the sample being examined. We used a range of specialized technologies to achieve this objective. A BCR-ABL experiment employing certain BCR-ABL P190 primers, was conducted to identify a specific chromosomal mutation. This made it possible to find the mutation. To obtain reliable findings, the samples were tested at various time intervals. Some of the samples were tested over a two- to three-day period, while others were conducted over a shorter period of time.

Results:

Each of the fifteen BCR-ABL positive ALL samples was found to have a CT value of around 25 cycles. To rule out the potential for error, water was used as a "negative control." Different periods of time were used to test the samples. The final results also showed that 15 acute lymphoblastic leukemia samples and 45 chronic myeloid leukemia patient samples were negative for BCR-ABLp190 translocation using the same approach. This exhibits a complete sensitivity of 100%.

Conclusion:

Real time polymerase chain reaction established increased detection of BCR-ABL1. Improved detection of BCR- ABL1 p190 and the potential for improved standardization across multiple laboratories makes real time qPCR a suitable method for disease monitoring in patients with acute lymphoblastic leukemia.

OP: 07

Diagnostic Utility and Critical Analysis of Flow Cytometric Data in Acute Leukemia

Farwa Raza

Co-Authors

Farwa Raza , Memoona Haider, Saifullah khan, Nouman Badar, , Qamar Un Nisa Chaudhary, Nighat Shahbaz and Mehreen Ali khan

Objectives:

The aim of this study was to compare the morphological and flowcytometric diagnosis in acute leukemia. Secondly, to evaluate the expression of commonly expressed immunomarkers, their patterns and aberrant expression to monitor MRD in acute leukaemia.

Methods:

Data was retrospectively analyzed from 100 de novo adult and pediatric acute leukemia patients during 2021 to 2022 at AFBMTC. CBC, bone marrow examinations were carried out to evaluate blast percentage and morphology. FCA was performed by using standard panel on peripheral blood or bone marrow samples. The surface and cytoplasmic antigens of interest were analysed and correlated with morphological findings. Statistical analysis was performed using SPSS.

Results:

Concordance rate between morphological and flowcytometric diagnosis was 82%. Of these, complete and partial concordance was 60% and 22% cases, respectively. Non-concordance was only in 4% cases. In 14% cases, FCA helped in sub-classifying the acute leukemia where morphology has failed. Flowcytometry helped to diagnose B- ALL (n=45), AML (n= 40), APML (n=6), T-ALL 3% (n=4), MPAL (n=2), AUL (n=2) and TAM (n=1).

Conclusion:

FCA helps in confirming morphologic diagnosis in acute leukemia, assigning specific lineage to the blast and influences the treatment and prognosis.

OP: 08

Mutational Landscape of Hematological Disorders in Pakistan

Dr Zaineb Akram

Co-Authors

Zaineb Akram, Raheel Iftikhar, Humayoon Shafique Satti, Qamar un-Nisa Chaudhry, Tariq Ghafoor, Tariq Khattak, Nighat Shahbaz, Mehreen Ali Khan, Nadia Sial, Hammad Javed, Saima Humayun Toor, Maryam Khan, Memoona Khan

Objectives:

The biggest challenge facing genomic researchers and clinicians in Pakistan is limited resources. As a result, genomic tools, specifically genome sequencing technologies, which are rapidly becoming indispensable, are not widely available, despite the fact that they are required in the majority of cases for diagnosis confirmation, treatment selection, and prognosis prediction. Our primary objective was to map the mutational landscape in rare genetic disorders. The secondary objective was to develop a working forum to assist clinicians from all over Pakistan in getting their patients genetically tested in affordable, easy and convenient ways.

Methods:

Armed Forces Bone Marrow Transplant Centre (AFBMTC) is the country's largest hospital providing clinical hematology and stem cell transplantation services to a catchment area of over 560,000 Km2. We sought to identify underlying genetic causes of various difficult-to-diagnose rare hematological disorders with heterogenous/overlapping symptoms and challenging clinical presentation using next-generation sequencing (NGS). As a first phase we used NGS services provided by a commercial laboratory in USA and in the second phase we are planning to develop this whole process at our own center.

Results:

The cases that genetic analysis helped identify included bone marrow failures, hemolytic anemias, immunodeficiencies, HLH, lysosomal storage disorders, DC, myelodysplastic syndrome, leukodystrophies, atypical hemolytic uremic syndromes, and a few other isolated cases. We used various online softwares to identify the pathogenicity of the mutations.

Conclusion:

Use of high-throughput NGS in our clinical hematology setting has proven to be useful in identifying genetic variants for accurate diagnosis, selecting appropriate therapies, and predicting prognosis.

Poster Presentation

PP: 01

Antimicrobial Susceptibility to Microorganisms in Hematological Malignancies; A Need to Review Institutional Protocols

Vajit Kumar

Co-Authors

Naveena Fatima (MSPH), Aisha Jamal (FCPS), Qurat-ul-Ain Rizvi (FCPS), Waqas Ahmed (MSC), Nida Anwar (FCPS)

Objectives:

The study was conducted to evaluate the prevalence of microorganisms and to observe the sensitivity pattern of antimicrobials as an institutional protocol to establish antimicrobial policies.

Methods:

A cross sectional study was conducted at National Institute of blood diseases and bone marrow transplantation, PECHS campus. Febrile neutropenia was defined as a single reading of oral temperature of >= 38°C on two or more occasions in 12 h in the presence of absolute neutrophil count of less than 1000cells/mm. Blood cultures were performed using the BACTEC blood culture system. Organisms were identified according to routine bacteriological procedures and disc diffusion method was used for interpreting antibiotic susceptibility.

Results:

A total of 310 cultures were observed in 305 patients. Out of total, 213 (69%) were found to be gram negative and 97 (31%) were gram positive. The most prevalent gram negative microorganism wAS Ecoli in 87 (41%). However, in gram positive; Staphylococcus epidermidis 49 (51%) was more prevalent. Gram negative were mostly reported in blood cultures 61 (20%) while gram negative was found in urine cultures 80 (26%). The association of sensitivity and resistance with gram negative and positive isolates was found statistically significant with Amikacin, Vancomycin, Fosfomycin and Ciprofloxacin.

Conclusion:

Gram negative isolates were found prevalent in our study. The sensitivity of Meropenem, Amikacin and Colistin was high than other regimens in gram negative while the sensitivity of Fosfomycin, and Linezolid was found in gram positive isolates. The regular review of microbial pattern and susceptibility evaluation is imminent for prevention.

PP: 02

Characterization and Variability in SSC/CD45 Properties of Blast Subtypes in Leukaemia

Dr Omer Javed

Co-Authors

Bushra Kaleem (MPhil); Fatima Meraj (FCPS)

Objectives:

A combination of right angle light scatter (RALS) with CD45 expression make up the properties of blast cells and can be used for the characterization of various blast populations in ALL and AML depending on their stage and maturation. The present study aimed at the detailed analysis of side scatter (SSC) versus CD45 dot plot to reach a diagnosis of acute leukaemia with minimal immunological markers.

Methods:

After data extraction for 1.5 years from 1st January 2021 to 30th June 2022 which included patients of acute leukemia irrespective of age and gender, flow cytometric analysis was performed on peripheral blood/bone marrow aspirate on FACS Calibur (FC500). The SSC vs. CD45 plots were evaluated with CD45 on the x-axis and SSC on the y-axis with SSC expression taken as low (0-200), moderate (200-400) and high (>400), and CD45 expression as negative (0-100), dim (100-101), moderate (101-102) and bright (>102).

Results:

This male predominant study of 97 leukemic patients reported acute lymphoblastic leukemia (ALL) to be most common entity. Both ALL and AML patients had maximum cases with moderate SSC and bright CD45 expression. Significant difference (p-value: <0.001) was observed in median w/h ratio in ALL (1.73) and AML (1.16) groups. A cutoff value of >1.34 w/h ratio was found to be 85.3% sensitive in diagnosing ALL patients.

Conclusion:

Analysis of the CD45/SSC plot can help in the timely identification in most of the leukemia cases resulting in feasible diagnostic process and early treatment initiation.

PP: 03

Identification of Additional Genetic Mutations in Myeloproliferative Neoplasms

Aysha Sarwar Khan

Co-Authors

Dr Yasar Yousafzai

Objectives:

The myeloproliferative neoplasms, which are Philadelphia negative include polycythemia vera (PV), essential thrombocythemia (ET) and primary myelofibrosis (PMF). They belong to a group

of hematopoietic clonal disorders that have a tendency to lead to bone marrow failure and also have chances of transformation to acute myeloid leukemia (AML), thus ultimately increasing the fatality ratio. The driver mutations have already been identified in these disorders but additional genetic mutations in this subgroup of patients is yet to be unveiled, which can affect the disease progression in some cases. Next generation sequencing (NGS) can potentially identify the simultaneous presence of disease associated genes, which can be very helpful in clinical management and scrutiny of patients suffering from MPN. This SLR was performed to identify the additional genetic mutations apart from driver mutations, which could serve as disease prognostication and personalized treatment.

Methods:

Systematic literature review was performed. An SLR was initiated by identifying research question: What are the additional genetic mutations in myeloproliferative neoplasms?

The process followed searching databases including Google scholar, Pubmed and Science Direct. The keywords used were myeloproliferative neoplasms, additional genetic mutations and next generation sequencing; the time period range was between 2007 till 2022. The total number of articles recruited from these three databases were2113, from which 510 articles were excluded as being duplicates. A total number of 1490 articles were excluded because of irrelevance of titles and abstract. Afterwards, 58 articles were excluded by applying exclusion and inclusion criteria. After applying all these criteria, 55 articles were left for full text scruitiny.A total number of 40 articles were further excluded after reading full text articles. The total number of articles recruited for SLR were 15. Data of relevance was extracted and entered in Microsoft excel spreadsheet to answer the research questions of this SLR.

Results:

The additional genetic mutations in myeloproliferative neoplasms other than the diver mutations (JAK2, MPL and CALR) included ASXL1, TET2, IDH1, IDH2,SRSF2, DNMT3A, TP53, KIT, NRAS, SF3B1, CBL, RUNX1, MSH6, MSH2 and GATA2. Most patients suffering from Polycythemia Vera, Essential Thrombocythemia and Myelofibrosis harbored additional genetic mutations along with JAK2/MPL/CALR. TET2 and ASXL1were found to be the most frequently mutated along with the driver mutations. Two or more genetic mutations were associated with a higher risk of disease progression.

Conclusion:

The additional/coexisting genetic mutations were idenitified in myeloproliferative neoplasms, which would help to improve disease prognostication and could serve a milestone in precision medicine and personalized treatment plan in myeloproliferative neoplasms.

PP: 04

Significance of Platelet Count at Diagnosis and its Association with Survival in MDS Patients; An Experience from Pakistan

Saniya Hameed

Co-Authors

Naveena Fatima (MSPH), Aisha Arshad (PhD), Aisha Jamal (FCPS), Qurat-ul-Ain Rizvi (FCPS), Nida

Anwar (FCPS)

Objectives:
The aim of the study was to observe the association of overall survival of MDS patients presenting with or without thrombocytopenia at diagnosis

Methods:
A retrospective cohort study was conducted at NIBD PECHS campus where MDS patients were recruited from 2018- 2021. Kruskal Wallis test was applied to observe the difference in survival days and Kaplan Meier Survival analysis was performed to observe the overall survival in each platelet category. P-value of <0.05 was considered to be statistically significant.

Results:
A total of 65 patients were analyzed. Median age (IQR) of patients was 60 (37) years with male predominance 41(63%). 18(28%) patients were MDS-EB1 and majority of patients were Intermediate risk IPSS. Overall median (IQR) hemoglobin (Hb) g/dl, total leucocyte count x109/L and platelet count (PLT) x109/L at diagnosis was 8(3.1), 4.2 (4.0) and 44 (101) respectively. Overall survival in patients with PLT <25 and with PLT 51-100 was 57%, with PLT 25-50 was 70% and with PLT > 100 was 91%. Median (IQR) survival days with <25 PLT was 79 (331), with 25-50 PLT was 66(577), 51-100 was 210 (301) and with > 100 it was 343 (498) days. The difference in mortality and survival days was not found significant between platelet categories (P-value >0.05).

Conclusion:
The median difference in survival days was higher in patients who were not presented with thrombocytopenia at diagnosis however it was not found significant. Further studies with large sample size are needed to evaluate the significance of thrombocytopenia presentation at baseline and its impact on survival in our patients.

PP: 05

Clinical Spectrum and Frequency of Bone Marrow Infiltration in Hodgkin Lymphoma Patients presenting to Hematology Department of a Tertiary Care Setting

Abeeha Khalid
Co-Authors
Urooj Ramzan

Objectives:
To determine clinical spectrum and frequency of bone marrow infiltration in Hodgkin Lymphoma patients presenting to Hematology Department of a tertiary care setting.

Methods:
This retrospective study has utilized secondary data maintained in medical record of patients

undergoing bone marrow biopsy in Hematology department of Allama Iqbal Medical College, Lahore. Medical records from January 2019 to October 2022 were reviewed and patients diagnosed with Hodgkin lymphoma on lymph node biopsy were included in the study using consecutive sampling technique. Prior consent was taken from all patients, authorizing use of their personal information for research purposes.

Results:
The study population consisted of 24 HL patients between 10 to 60 years of age. The median age was 41 ± 16.21 years. There were 21 male (87.5%) and 03 female (12.5%) patients (male-to-female ratio: 7:1). The clinical features of the patients ranged from lymphadenopathy with or without B symptoms to presence of non-specific symptoms. Out of 24 cases of HL, 07 exhibited bone marrow infiltration (29.1%).

Conclusion:
This paper presents the clinical spectrum and frequency of bone marrow infiltration in Hodgkin lymphoma with the help of medical history and bone marrow biopsy findings using analysis of secondary data. The frequency of bone marrow infiltration by Hodgkin lymphoma determined at our center turned out to be 29.1%.

PP: 06

Clinico-Biological Features of Pediatric Early T-Cell Precursor Acute Lymphoblastic Leukemia

Mushkbar Fatima
Co-Authors
Talha Israr, Fatima Meraj

Objectives:
The objective of the study is to analyze the frequency, clinico biological and prognostic features of pediatric ETP- ALL.

Methods:
We retrospectively analyzed the clinico-biological characteristics of pediatric patients with ETP-ALL. All de novo cases of ETP-ALL diagnosed by 8-color flowcytometry (performed on FACS CANTO-II were retrieved from electronic medical record. Counted data was presented as percentages (%) whereas measurement data was presented as mean values ± standard deviation (SD). Chi Square test (cross tabulation method) was used for categorical variables. P value less than 0.05 was considered statistically significant with 95% confidence interval.

Results:
The overall mean of ETP-ALL patients was 9.53±3.72. Out of 23 patients 3 (13.0%) were females and 20 (87.0%) were males. Out of 23 patients, 19 (82.6%) had lymphadenopathy, 16 (69.6%)

hepatospleenomegaly and 06 (26.1%) mediastinal mass. Mean Hb, WBC and platelets count of ETP-ALL patients was 7.82±2.43, 115.1±160.8, and 87.6±101.25 respectively.ETP-ALL patient's shows absence of CD1a, CD8, CD10, CD11c, CD16, CD19, CD20, CD22 CD61 and CD64. Whereas, the most frequent expression found in ETP-ALL patients were Tdt, CD34 and ICCD3.

Conclusion:

Our findings conclude that in ETP-ALL patient's expression of most of the biomarkers shows absence whereas the most prominent expression in these patients was CD34.

PP: 07

Cytogenetics Profile of Pediatric Acute Myeloid Leukemia and its Association with Subtype

Azfar Ahmed

Co-Authors

Dr. Neelum Mansoor (MBBS, FCPS), Dr. Fatima Meraj (MBBS, MCPS, FCPS), Sidra Maqsood, Aamir Ehsan

Objectives:

To assess the frequency of cytogenetics aberrations AML and its Association with different subtypes of AML. Discusses comparative study of different variables.

Methods:

A cross-sectional study conducted in Cytogenetic laboratory of The Indus hospital, Karachi. All AML patients from January 2020 to December 2022 were included. FISH, karyotype, TLC, and MPO were included.

Results:

The median age was 8 (4-13) years, females were 25(26.3) and males were 70(73.7). The median WBCs were 8.5(4.35-35.3), MPO was done in 41 cases, out of which 10(24%) were negative and 31(76%) were positive. The RUNX1 was run in 69 cases in which 15(22) were positive and negative were 54(78), the PMLRARA was run in 25cases in which positive were 15(60) and negative were 10(40), the CBFB was run in 66 cases in which positive were 4(6) and negative were 62(94). In subtypes majority were AML-M2 32(36%), followed by AML-M3 25(28.1).

Conclusion:

In this study, we have counted the AML-M2 as a main sub type. We have found 60% positivity of PML/RARA. Conventional cytogenetic analyzed remain the gold standard method in cytogenetics profile.

PP: 08

Detection of Translocations of Multiple Myeloma on Fluorescent in Situ Hybridization (FISH) and Its Clinicopathological Correlations

M Umar

Co-Authors

Hamid Saeed Malik, Manzar Bozdar, Muhammad Shakir, Ayesha Khurshid, Rafia Mahmmod, Samia Shafqat

Objectives:

An abnormal proliferation of monoclonal plasma cells occurs in the bone marrow in multiple myeloma (MM), a haematological malignancy. MM is a comparatively uncommon cancer and accounts for approximately 1 to 2% of all cancers. Among haematological malignancies, it makes up 17% of cases. Most of the cases harbour any of the five chromosomal translocations t(4;11), t(4;14), t(14;16), t(6;14) and t(14;20) along with cytogenetic abnormality del 17p. This study will determine different cytogenetic abnormalities of MM using Fluorescent in Situ Hybridization (FISH) and correlate them with a clinicopathological presentation.

Methods:

Forty patients were included in the study after diagnosis using international myeloma working group (IMWG) criteria. Clinical presentation like bone pain, backache, fatigue, pallor, and weight loss was noted. FISH analysis was done for t(4;14), t(11,14), t(14;16), t(14;20) and del17p. Data was analyzed using the Chi-square test. A p- value °0.05 was considered significant.

Results:

FISH for t (4;14) was positive in 22 (55%) patients, t(11;14) was positive in 4 (10%) patients, t(14;16) was positive in 3 (7.5%) patients and t(14;20) was positive in 3 (7.5%) patients while for del17p was positive in 8 (20%) patients. Cases with t(4;14), (11;14), and t(14;20) had bone pain, fatigue, and backache as the most common presentations. Among various parameters studied, lytic lesions, beta 2 microglobulins, spike protein, haemoglobin, TLC, ESR, albumin, and creatinine had significant associations.

Conclusion:

Detection of various mutations using FISH in MM patients not only has diagnostic importance but is also useful for risk stratification and thus affects treatment decisions.

PP: 09

Frequency of Central Nervous System Involvement in Patients Presenting with Burkitt's Lymphoma

Dr Shukrya Khan

Co-Authors

Dr Nadia Sajid

Objectives:

To assess the frequency of central nervous system involvement in patients presenting with Burkitt's Lymphoma.

Methods:

Study Design: Cross sectional retrospective

Setting: Department of clinical hematology, INMOL hospital Lahore Duration: 10 years i.e 2012 to 2022

Data Collection: After meeting the inclusion and exclusion criteria 75 patients were enrolled. The patients were evaluated for neurological symptoms including focal neurological deficits, cranial nerve palsies, weakness of one or more parts of the body and/or altered consciousness, along with corroborating findings on imaging modalities including computed tomography and cerebrospinal fluid analysis. If there were positive findings on CT scan and/or atypical cell on cerebrospinal fluid cyclospin analysis, then CNS involvement was labeled.

Results:

In this study the mean age of the patients was 29.72±11.07 years, 46(61.33%) patients were male. In our study the CNS involvement was found in 21(28%) patients. Furthermore,in male patients the CNS involvement was noted in 8(17.4%) patients and in female patients the CNS involvement was noted in 13(44.8%) patients. This difference was statistically significant. i.e. p-value=0.010

Conclusion:

According to this study the frequency of central nervous system involvement was 28% in patients presenting with Burkitt's Lymphoma with a female predominance. Based on the above discussion and findings of a higher frequency of CNS involvement in Burkitt's Lymphoma in our presenting population, a more aggressive CNS directed approach during management may be imperative.

PP: 10

Hematological and Molecular Response of Nilotinib in Chronic Myeloid Leukemia Chronic Phase

Dr Ayesha Sadia

Co-Authors

Dr Yasir Yousafzai

Objectives:

To assess hematological as well as molecular, BCR-ABL, response of chronic myeloid leukemia chronic phase patients who were treated with second generation tyrosine kinase inhibitor,Nilotinib, for 6 months.

Methods:

This prospective cohort study was carried out in Oncology department of Hayatabad Medical Complex, and Khyber Medical University, Peshawar. The time duration of study was six (6) months after synopsis approval. Sixty six patients were enrolled after fulfilling inclusion criteria. Informed consent was obtained from all individuals before recruitment of patients in study. Demographic and clinical information of each patient was collected. Nilotinib standard dose 300 mg BD was prescribed. Efficacy of nilotinib was determined after six months of treatment duration. The collected data was initially entered in Microsoft Excel and further analyzed on SPSS version 23.

Results:

Sixty six (n=66) CML patients were enrolled. Male gender (n=34) was slightly more predominant as compared to female (n=32). Mean age was 42 years. Mean baseline total leucocytes count was 165,000/ml. After 03 months of nilotinib therapy complete hematological response was 100%. At the end of 06 months early molecular response(BCR-ABL<_10%) was achieved in 96.96% (n=64) CML patients. Only 02 patients didn't attain early molecular response patients (BCR-ABL>10%).

Conclusion:

Hematological and molecular response with nilotinib was achieved in significant majority of CML-CP patients.

PP: 11

Induction Chemotherapy in Childhood Acute Lymphoblastic Leukaemia and its Correlation with Cytogenetic and Molecular Features

Major Dr Noman Anjum Rana

Co-Authors

Brig Asad Mahmood (FCPS), Col Helen Mary Robert (FCPS), Maj Saima Zahir (FCPS), Maj Intzar Ali (Resident), Dr Sana Riaz (M.D)

Objectives:

To study the correlation of cytogenetic and molecular abnormalities on induction chemotherapy in childhood acute lymphoblastic leukaemia (ALL)

Methods:

Analytical study conducted at Armed Forces Institute of Pathology (AFIP), from March 2021 to August 2021.

Results:

There were total 142 patients with mean age of 6.4 + 3.6 years and a male to female ratio of 2.7:1. Immunophenotyping revealed 85.9% cases as B-cell ALL and 14.1% as T-cell ALL. The most frequent cytogenetic and molecular abnormalities were hyperdiploidy (19%), t(9;22)/BCR-ABL1(p190) (10.6%), complex karyotype (5.6%), E2A-PBX1 (8.5%), and TEL-AML1 (4.9%). A total of 127/142 (89.4%) achieved haematological remission after induction therapy with two deaths during induction therapy 1.4%. Post induction remission rate in patients with favourbale cytogenetic/molecular defects was 100% and in children with bad prognostic changes the rate of remission was 69.2%. Chi-square test showed a significant association between cytogenetic/molecular abnormalities and post induction remission (p-value <0.001).

Conclusion:

The study of childhood ALL in Pakistani population showed most common cytogenetic defect to be hyperdiolpoidy. Molecular defect of BCR-ABL1 had frequency of 10.6% i.e., more than reported in literature and TEL-AML1 4.9% i.e., less than that reported in literature. Patients with favourable cytogenetic/molecular defects had highest rate of post induction remission and a positive association was observed between cytogenetic/molecular changes and post induction therapy results.

PP: 12

Infection Rates during Salvage Chemotherapy Regimens in Patients With Relapsed/Refractory Lymphomas: An Experience of A Tertiary Care Center

Dr Kanta Devi

Co-Authors

Dr Natasha Ali, Dr Usman Shaikh, Dr Salman Naseem Adil

Objectives:

Prospective study aims to assess the rate of infection in lymphoma patients on salvage chemotherapy.

Methods:

study was conducted at a tertiary care hospital in Karachi, Pakistan. Patients aged 16-65 years of both gender and appropriate organ function were included. Patients with pre- existing cardiovascular disease and active infections were excluded. STATA version 16 was used to analyze the data.

Results:

A total of 98 patients were included. Febrile neutropenia was found in 4.1% of patients, all of whom had DLBCL (refractory in 2 patients and relapsed in 2 patients). The mean age of patients was 41.7 ± 13.5 years. Sepsis was found in 14.1% of patients, of which 8 had NHL and 6 had HL. Half of all patients with sepsis had late relapse.

Conclusion:

Infectious complications are high in lymphoma patients on salvage chemotherapy. Often, they may progress to sepsis, with its associated high morbidity and mortality in this vulnerable patient population.

PP: 13

Management of Calreticulin Mutated Myeloproliferative Neoplasms: Real-world Outcomes from a Low-Middle Income Country

Faiqa Fayyaz

Co-Authors

Munazza Rashid, Uzma Zaidi

Objectives:

Incidence, clinical, behavior, treatment response, and challenges in the management of patients with CALR mutated ET and PMF in Pakistani population and to increase the understanding and knowledge of the treating physicians regarding CALR mutated MPNs

Methods:

Prospective observational study conducted at National Institute of Blood Diseases and Bone Marrow Transplantation between 2014 and 2019. All ET patients were categorized into high, intermediate and low risk based on the IPSET score. DIPSS plus scoring system was used to categorize PMF patients into low, intermediate-1, intermediate-2 and high-risk groups. CALR mutation methodology include DNA extraction on peripheral blood or bone marrow samples collected in EDTA tubes. DNA extracted using the MagNA Pure LC DNA Isolation Kit (Roche Applied Science, Indianapolis, IN) according to the manufacturer's instructions.

Results:

CALR mutation was detected in 37.93% of ET and 37.25% of PMF, whereas Janus Kinase 2 (JAK2) mutation was detected in 50% of ET and 53.92% of PMF patients. 12.06% of ET and 8.82% of PMF patients were triple- negative.The OS among ET and PMF patients was statistically similar in all three mutational groups.

Conclusion:

CALR mutation comprised 32.4% of ET and 38.1% of PMF with non-mutated JAK2 in our study group, therefore we strongly suggest performing CALR mutation analysis for the diagnosis of JAK2 negative MPN in our population.

PP: 14

Mutational Status of Tp53 in Newly Diagnosed B-Cell Chronic Lymphocytic Leukemia Patients and its Association with Advanced Clinical Stage of Disease at Presentation

Dr. Syeda Mah Ali

Co-Authors

Dr. Naila Raza, Dr S.M.Irfan

Objectives:

B cell-Chronic lymphocytic leukemia (CLL) is a slow growing clonal proliferation of mature lymphoid cells that exhibits highly heterogeneous clinical behavior. Various clinicohematological, cytogenetics and molecular markers play a significant role in determining the clinical course, in predicting the treatment response and prognosis. In this context, Tp53 mutation is one of the poor prognostic marker. This study aimed to see the mutational status of Tp53 in newly diagnosed B-CLL patients and evaluate its association with advanced Binet's stage disease.

Methods:

This was a prospective observational study which was conducted at the Department of Haematology, Liaquat National Hospital (Karachi, Pakistan) between January 2020 and December 2021. Patients were diagnosed based on the International Workshop on Chronic Lymphocytic Leukaemia (IWCLL) criteria. Clinicohematological parameters were recorded and Tp53 mutation analysis by FISH was performed. Patients were clinically staged according to Binet staging system. Discrete variables were compared using Fisher's exact tests; all statistical analyses were performed using IBM SPSS ver. 22.

Results:

We evaluated Tp53 mutation in 128 B-CLL cases. The mean age was 62 years (35-88years) including 69.5% (n=89) males and 39.5% (n=39) females. 10 patients (7.8%) tested positive for Tp53 mutation and 118 patients (92.2%) were negative. Tp53 mutation was significantly associated with advanced clinical stage disease (Binet's stage C) at presentation. In Tp53 positive group, 40% (n=4/10) patients presented with Binet's stage C compared with 21.2% (n=25/118) patients in Tp53 negative group. (21.2% v 40%; $P < .039$).

Conclusion:

Our study indicate that TP53 mutations are associated with advanced clinical stage at presentation. Baseline analysis of TP53 mutation should be performed in patients with B-CLL who presented with advanced disease. It will help in counselling and treatment planning.

PP: 15

Myelodysplastic Syndrome (MDS): Different Types in Pakistani Population, Clinical and Hematological Profile in A Tertiary Care Center

Dr Faheem Ahmed Memon

Co-Authors

Prof Ikram Din Ujjan

Objectives:

The aim of this study was to analyze the types of MDS in Pakistani population according to the ethnicity along with clinical and hematological parameters in diagnosed patients of Myelodysplastic Syndrome

Methods:

This Cross Sectional Descriptive Study was conducted at Diagnostic and Research Laboratory, LUMHS, Hyderabad, Pakistan, in collaboration with National Institute of Blood Disease and Bone Marrow Transplantation, (NIBD & BMT) Karachi, Pakistan. from January 2019 to December 2020. There were total 62 patients, from which 67% (n=42) were males and 33% (n=20) females. The median age was 47.75 years. The patients were classified into different subtypes of MDS on the basis of WHO classification 2016 and were also divided into regarding ethinicity,52% (n=32) were belonging to Urdu speaking community, 24% (n=15) were Sindhi speaking, 13% (n=8) were of Punjabi origin. There were 6% (n=4) patients of the Pathan community and 5% (n=3) were Balochi. Patients Hemoglobin concentration, TLC count, Platelet count and blast cells were recorded. The most common presenting complaint was fever, followed by weakness, pallor, Bleeding/ Bruising, Weight loss, Spleenomegaly, Hepatosplenomegaly, Lymphadenopathy and Repeated infections.

Results:

Mostly the patients in our study were belonging to MDS-MLD [n=13] followed by MDS-EB-2 [n=10], MDS-U [n=10], MDS-SLD [n=9], MDS-RS-SLD [n=6], MDS-EB-1 [n=5], MDS with isolated deletion 5q [n= 4], MDS-RS-MLD [n=3]
and MDS transformed to AML [n=2].

Conclusion:

Although MDS is considered uncommon statistics report that the disease is on the rise. The average age of MDS patients from our country was found to be about a decade younger than the West.

PP: 16

Role of CD73 And CD123 in Predicting BCR-ABL1, ETV6-RUNX1 & KMT2A Gene Rearrangements in B-Cell Acute Lymphoblastic Leukemia

Fatima Meraj

Co-Authors

Neelum Mansoor, Mushkbar Fatima, Omer Javed, Talha Israr, Saba Jamal

Objectives:

To evaluate role of CD73 & CD123 as prognostic biomarker for predicting BCR-ABL, ETV6-RUNX1 & KMT2A gene rearrangements in patients with B-cell acute lymphoblastic leukemia and its relationship with the clinical characteristics.

Methods:

A retrospective study of 51 pediatric (B-ALL) patients was carried out at The Indus Hospital and Health Network in Karachi, Pakistan) between June 2022 and September 2022. All de novo cases of B-ALL diagnosed by 8-color flowcytometry (performed on FACS CANTO-II were retrieved from electronic medical record.

Results:

The overall median age of 51 patients of B-ALL was 6 (IQR, 4.3-11).CD73 expression shows a significant association with platelets and neutrophil count having a p-value of 0.001 and 0.004 respectively. CD73 also shows a significant association with the risk stratification p-value=0.002. While, CD123 expression shows a significant association with ETV6-RUNX1 (p-value= 0.046).

Conclusion:

Our findings reveal that only expression of CD123 shows a significant relationship with ETV6-RUNX1 and is considered as prognostic biomarker for prediction in patients with B-cell acute lymphoblastic leukemia. While, CD73 shows significant association with risk stratification and laboratory parameters.

PP: 17

Role Of Neutrophilic Scattergram Analysis of Automated Machines in Flagging of Leukemoid Reactions and Chronic Myelogenous Leukemia

Dr Sindhu Rehman

Co-Authors

Dr. Zunairah Mughal Dr. Hira Babar

Objectives:

Scatter gram events and flags can be used as rapid cost-effective initial screening tool between blood malignant and nonmalignant diseases.

Methods:

It was a descriptive cross-sectional study conducted in hematology department of King Edward medical University from November 2021 to December 2021. Total 300 blood patients were included in the study which were divided in three groups (control, CML and leukemoid reaction). The values of different parameters of white blood cell differential as SSC-SFL,SSC-FSC,FSC-SFL and the white cell nucleated region (WNR) were noted. Data was analyzed in SPSS version 25 p-value equal or less than 0.05 considered as signific

Results:

62 patients were diagnosed as CML, 139 were having leukemoid reaction and 99 were healthy subjects taken as control groups. Patients have shown higher TLC, platelet count, neutrophil count, eosinophil count, basophil count and IG as compared to control group. Similarly low hemoglobin was also observed in both leukemoid reaction and CML group as compared with control group showing a significant correlation. The neutrophilic scattering parameters including NESFL, NEWX, NEWY and NEWZ have shown significant values of AUC (0.639, 0.824, 0.899, 0.786 to differentiate between the two groups.

Conclusion:

Neutrophilic scattergram can be helpful in predicting malignant diseases of blood and differentiating benign and malignant conditions. The advance sysmex machines have all these parameters and are automated, cost effective and highly predictive of the nature of the disease.

PP: 18

Studying Biological Diversity of Chromosome 7 Aberrations in Hematological Malignancies

Dr Sidra Maqsood

Co-Authors

Neelum Mansoor (FCPS), Syeda Ambreen Zehra (MSc), Azfar Ahmed (MSc), Aamir Ehsan

Objectives:

Chromosome 7 abnormalities occur at any age, have several disease associations and are generally associated with poor outcome. Monosomy 7 or partial deletion of the long arm of chromosome 7 (7q) in association with hematological malignancies is a recurrent cytogenetic aberration in myeloid disorders. The study aimed to get insight into monosomy 7 malignancies.

Methods:

Conventional karyotyping performed using G-banding. All cases with partial or complete loss of chromosome 7 were retrieved from October 2020 to October 2022 and included in this study.

Results:

Out of total 15 cases of monosomy 7, 10(67%) had additional cytogenetic aberrations. Mean age was 9(5-21) years; male to female ratio 1.5:1 consisting of 11(73%) children and 4(27%) adults. B-ALL were 6(40%), 5 (33%) were AML and one case of chronic myelomonocytic leukemia, myelodysplastic syndrome and aplastic anemia each. Mean white cells and blasts were 7.8(3-33.6) and 24(4.5-35.5) respectively. In 6 B-ALL patients 5 were NCI high risk. BCR/ABL1 by FISH was positive in 2(13%). In B-ALL, 2(13%) expired during induction and 1(7%) had refractory disease. Three (13%) left before treatment and 9(60%) were alive. In those 9 patients, 3(33%) were referred out, 2(22%) were on palliation, 3(33%) were on follow-up and 1(12%) left during treatment

Conclusion:

Monosomy 7 is frequent in myeloid disorders and our data also revealed its presence in lymphoid malignancies which is an uncommon finding in literature. Cases harbor monosomy 7 are characterized by very poor prognosis. It is vital to study gene expression profile to get further insight to disease biology.

Platelets and Coagulation Disorders

Inherited Thrombophilias

Brig. Dr Hamid Saeed Malik

Thrombophilia is a spectrum of abnormalities characterized by a greater propensity of the blood to clot. Clinical thrombophilia is the consequence of multiple genetic and/or environment interactions that result in a hypercoagulable state and increase the risk of an individual for a thrombotic event in which intravascular thrombus formation may be arterial or venous.

Hereditary thrombophilia is defined by a malfunction or lack in natural anticoagulant processes, resulting in a higher tendency to develop thrombosis. Genetic risk factors for thromboembolism are deficiencies of natural anticoagulant proteins (antithrombin, protein C and protein S), dysfibrinogenemia, hyperhomocysteinemia or mutation of factor II (F2, G20210A mutation) or factor V-Leiden (F5, G1691A). Clinical manifestations of inherited thrombophilia are diverse. Some people may never develop thrombosis while others may have had recurrent episodes before the age of 30.

So, who really needs a work-up for hereditary thrombophilia is the important question. Comprehensive personalized clinical evaluation to assess whether the thrombotic episode was provoked (secondary) or unprovoked (idiopathic) and the type of risk factor (major, minor, transitory or persistent) is essential to guide thrombophilia testing. Moreover, testing should be used in a highly selective manner and only be done where it impacts clinical management in terms of defining the duration of anticoagulation or to estimate the individual recurrence risk for thrombotic disease.

In our experience, inherited thrombophilia is present in approximately 24% of patients presenting with a thrombotic episode. It is predominantly observed in patients less than 30 years of age. Factor V Leiden mutation is the most common inherited cause of thrombophilia.

Hospital-Acquired Venous Thromboembolism

Prof. Dr Bushra Moiz

Hospital-acquired venous thromboembolism (H-VTE) refers to the venous thromboembolism (VTE) occurring during the hospital-stay or within 90 days of hospital discharge. VTE is responsible for >250,000 hospital admissions per year and is a major cause of morbidity and mortality in the United States. Similarly, it is estimated that 25,000 people in the UK die from H-VTE every year which could have been prevented. A UK survey suggested that 71% of patients assessed to be at medium or high risk of developing deep vein thrombosis did not receive any form of mechanical or pharmacological VTE prophylaxis. Moreover, at least 50% of episodes of VTE in adults attributable to hospitalization are diagnosed after hospital discharge and may occur up to 3 months after leaving hospital. The risk of H-VTE depends not only on the reason for admission (procedural risk) but also on co-existing patient-related factors (patient-related risk like diabetes, hypertension, old age, obesity, immobility, cancer, hormonal therapy etc.). VTE is related to recent hospitalization in approximately half of all adult cases. In addition, approximately half of all hospitalized patients are at risk by conventional criteria.

Amongst seven million patients discharged from nearly 1000 American acute care hospitals, postoperative VTE was the second most common complication, the second-most-common cause of excess length of stay, and the third most common cause of excess mortality and excess cost. Besides mortality, H-VTE is associated with complications like post-thrombotic syndrome and chronic pulmonary hypertension, risk of bleeding from therapeutic intensity anticoagulation, delayed discharge, and re-admission. Postmortem studies demonstrate that about 85% of deaths in hospital due to H-VTE occur without a diagnosis of VTE before death. Late onset VTE after hospitalization is increasingly recognized in both surgical and medical patients and the development of Risk Assessment Models (RAMs) for use at the time of discharge to determine which patients require extended prophylaxis are a likely development. SMART study concluded that incidence of DVT in Asian population is at par with western populations. A systematic review reported incidence of DVT and PE at 2.6 to 12.8% in surgical patients at Pakistan. In this talk, risk factors, frequency and prevention of H-VTE in local setting will be discussed.

Anticoagulation and Sex Related Challenges

Dr. Abdul Manan

Anticoagulant therapy can exacerbate menstrual blood loss. This appears to be especially true for direct oral anticoagulants. Hormonal therapy, tranexamic acid, or treatment modification can be used to treat abnormal uterine bleeding. The use of combined oral contraceptives (Pill) increases the risk of VTE. The magnitude of the risk is determined by the type of progestogen and the estrogen doses used. Concomitant hormonal therapy does not increase the risk of recurrent VTE in women taking therapeutic anticoagulation. Low dose progestin only pills and levonorgestrel releasing intrauterine devices do not increase the risk of VTE.

VTE is frequently caused by transient hormonal risk factors in young women, which affects prognosis. In recurrent VTE risk assessment models, sex is used as a predictor. However, current guidelines do not advocate for their use.Pregnancy increases the risk of VTE by four-fold to five-fold. Thrombophilia and obstetric risk factors increase the risk of pregnancy related VTE even further. The risk of recurrence during pregnancy or postpartum appears to be influenced by risk factors present during the first VTE in women with a history of clots. Antepartum and postpartum thromboprophylaxis with low molecular weight heparin is recommended for the majority of women with a history of VTE. Women are more likely than men to be affected by VTE at a younger age, and they must deal with long term complications (Post thrombotic syndrome) of deep vein thrombosis early in life.

Many clinicians have received limited training on the special considerations involved in caring for women of reproductive age. To address this gap, this review summarizes current literature relevant when caring for young women who require treatment with anticoagulation.

Inherited Thrombocytopenia

Prof. Marrie Christine Alisse

Next generation sequencing has made it possible to identify many new forms of hereditary thrombocytopenia. In recent years, this has changed the view of Inherited thrombocytopenia. it has become clear that some of the mutations responsible for platelet deficiency predispose the patient to serious, hematological, and non-hematological complications (bone marrow aplasia, hematological malignancies, kidney failure, immune deficiencies…) which strongly influences the prognosis and the quality of life of affected subjects. Inherited thrombocytopenia is often misdiagnosed with immune thrombocytopenia. Checking that any unexplained thrombocytopenia even modest is not inherited is of great value to define the prognosis, adapt treatment and improve the quality of life. During this talk we will present the main features of hereditary thrombocytopenia sometimes illustrated with clinical examples.

Acquired Coagulopathies

Prof. Catherine Hayward

Emicizumab Prophylaxis: A Novel Alternative Therapy for Severe Hemophilia A Patients With and Without Inhibitors

Dr. Munira Borhany

Emicizumab is a humanised, bispecific monoclonal antibody that connects active factor IX and factor X to replace the function of absent activated factor VIII, restoring hemostasis. It has a long half-life and coupled with a subcutaneous route of administration and high bioavailability. We have assessed the efficacy in terms of bleeding, safety, and quality of life of Emicizumab prophylaxis in persons who have hemophilia A (HA) with and without inhibitors in 36 HA patients. Nineteen patients were inhibitor positive, while 17 patients were without inhibitors with annual bleeding rate (ABR) of 8 or greater. The five-level EuroQol five-dimensional questionnaire (EQ-5D-5L) and assessment of joints were performed. Our patients' mean age was 19.7±14.42 years. Patients clinically presented with common bleeding symptoms included: hemarthrosis >95%, GI bleeding 13.8 %, bruises and gums bleeding 13.8%. Our results showed significant reduction in the bleeding episodes after the prophylaxis and joints assessment and EQ VAS analog scores also showed a significant improvement in health state after treatment as assessed at different time points. Thus our results suggest that patients on prophylactic treatment with Emicizumab were less restricted and had improved quality of life, especially improved health and social lives. Similarly, it was well tolerated, and no participant discontinued because of adverse events.

Genetic Alterations in Type III Von Willebrand Disease
Dr M Asif Naveed

The gene of vWF is located on chromosome 12p having 52 exons encoding protein of 2813 amino acids. Worldwide studies have revealed that mutations are spread throughout the entire span of gene and few studies have reported that mutations in certain sites are more prevalent in particular population. A grey area exists between symptomatic type I vWD and less severe type III vWD which needs exploration at the genetic level for clinical decision making. Since mutation data from Pakistan is scarce so antenatal detection of vWD is also a challenge. There is also considerable phenotypic variation in bleeding severity of the type III vWD patients ranging from less severe to markedly severe bleeding. The type III vWD has considerable phenotypic variability. Pathogenic mutations are spread throughout the gene. Truncating and splice site mutation have worse phenotype of the type III vWD. We hereby propose that as a first step targeted sequencing for the exons (which have most of the mutations) may be carried out in difficult diagnostic and antenatal cases for appropriate and cost-effective clinical decision making.

ORAL PRESENTATION
OP: 01

Coagulation Profile in COVID-19 Patients and its Relation to Disease Severity

Dr Warda Iqbal

Co-Authors

Dr. Kiran Aamir FCPS Hematology

Objectives:

COVID-19 is a new pandemic, caused by Severe Acute RespiratorySyndrome-CoronaVirus-2 (SARS-Cov2). The disease has different clinical presentations, ranging from asymptomatic to mild, moderate or severe symptoms, with or without the presence of pneumonia. Fever and coughing are the most common symptoms at a global level.

The accumulated evidence has shown that many biochemical and haematological parameters become altered in COVID-19 patients, and this has been correlated with the severity of the disease and in some cases associated with the prognosis of the patients. The laboratory parameters together with other demographic and clinical data of patients could allow them to be categorized in the initial stages, thus identifying people who will become critically ill and making it possible to improve their clinical care and seek adequate therapeutic strategies this study focuses on analyzing the importance of biochemical , haematological and Inflammatory markers in COVID-19 patients and their implications in the evolution of the disease.

Methods:

This is a cross section study of 100 patients who tested positive with PCR COVID-19 from January 2022 to June 2022 and the results were included in the analysis.

Results:

Significantly, the disease severity was associated with increase age, C-reactive protein, white blood cell count , prothrombin time , activated prothrombin time and D-dimer in patients with COVID positive PCR. Furthermore, patients with abnormal radiological findings significantly showed a low oxygen saturation and significantly higher level of factor VIII, and VWF:Ag which were the independent predictors of disease severity association.

Conclusion:

The clinicians may consider the hematological and biochemical parameters in the patients with COVID-19 in future decision-making. These indicators might support clinical decisions to identify high fatality cases and poor diagnosis in the initial admission phase in COVID-19 patients.

OP: 02

Evaluation of NLR and PLR in Immune Thrombocytopenic Purpura:

Is it Worth Doing?

Aisha Arshad

Co-Authors

Samina Naz Mukry (PhD), Tahir Shamsi (FRCPath)

Objectives:

Immune thrombocytopenia (ITP) is an autoimmune disorder. The clinical biomarkers like Neutrophils to lymphocytes ratio (NLR) and platelet to lymphocytes ratio (PLR) can be used as differential diagnostic tool in ITP. The current study was planned to evaluate utility of NLR and PLR in ITP diagnosis and their association with disease prognosis and response to treatment.

Methods:

A case control study (1:1) was conducted from January 2015 to December 2017 with 111 ITP patients and 111 healthy controls. Peripheral blood was collected and CBC were recorded using Sysmex XN-1000.The calculation of NLR and PLR was done using absolute value of neutrophils, lymphocytes and platelets counts. The significant difference (p=<0.05) between ITP patients and healthy control groups was determined by Kruskal wallis test, Dunn's test and spearman's correlation test was done to evaluate platelet count correlation with IPF using SPSS ver.23

Results:

Low hemoglobin and platelet counts with high total leucocyte count (TLC) and IPF were detected in ITP patients as compared to healthy individuals (p=<0.05).Among all groups of ITP patients, very low platelet count with median(IQR) of 2(3.8)x109/l was observed in ND-ITP group. The NLR was high with prognosis of disease as higher levels were observed in P-ITP. The PLR was significantly low in ND-ITP, P-ITP, C-ITP, R-ITP and compared to controls with p=<0.001.

Conclusion:

The simple, reliable and calculated NLR and PLR ratios can be used in predicting prognosis and response to treatment in ITP and to some extend the severity of disease.

Comparison of Sensitivity and Specificity of Urea Solubility Test for Factor XIII with

OP: 03

Frequency of Inhibitors among Known Hemophilia A Patients Presenting to Hematology Department of Tertiary Care Hospital

Javeria Abdullah

Objectives:

To determine the frequency of inhibitors among known hemophilia A patients.

Methods:

A total of 100 patients of hemophilia and on treatment for more than 1 year, from 2 to 60 years of age, irrespective of the gender were included. Patients with history of inhibitors previously, anti-thrombotic drugs, liver disease and vitamin K deficiency were excluded. All the patients were undergone APTT based screening for inhibitor, both immediately and two hours after mixing the patients plasma with the normal plasma.

Results:

Age range in this study was from 2 to 60 years with mean age of 37.21 ± 14.73 years. Frequency of inhibitors among known hemophilia A patients was seen in 18 (18.0%) of cases.

Conclusion:

This study concluded that frequency of inhibitors among known hemophilia A patients is quite high.

OP: 04

Platelet Factor 4 (PF4 Antibody) in Diabetic and Non-Diabetic Patients during Heparin Therapy

Dr Razia Asif

Co-Authors

Prof Dr Ikram Din Ujjan,Dr Kiran ,Dr Arshi Naz

Objectives:

Heparin induced thrombocytopenia (HIT) is a life-threatening complication and requires highly prioritize management. It is suggested by decrease in the number of platelet count during or shortly after heparin therapy in the absence of other medical conditions responsible for thrombocytopenia. To evaluate the significance of platelet factor 4 (pf4 antibody) in diabetic and non-diabetic population during heparin therapy at tertiary care hospital LUMHS Hyderabad / Jamshoro Sindh Pakistan.

Methods:

Total 6ml venous blood was drawn 3ml in EDTA tube and 3ml in tube with no additives. Patient platelet count was performed on Sysmex XN1000 I Japan. HBA1C were performed ARKRAY ADAMS A1C lite HA 8380V. Platelet Factor 4 antibodies were detected on ID PaGIA Heparin/PF4 antibody test.

Results:

Total 173 individuals were included which consists of diabetic and non-diabetic population. Majority was male and non-diabetic and mean ± SD for age was 54.72±8.62. The mean±SD for age in non-diabetic individuals was 51.87±7.74 and 187.84±19.95 (p=0.04). The mean ± SD for platelet in relation to gender and diabetic population was observed to be significant (p=0.03). The PF4 antibody in context to age of the population, thrombocytopenia and gender was statistically significant (p-value 0.00). The PF4 antibodies in context to the diabetic and non- diabetic population were statistically non-significant (p-value 0.49).

Conclusion:

Diabetes mellitus is associated with a higher likelihood of developing heparin induced antibodies and an increased combined incidence of arterial complications.

OP: 05

Role of Immature Platelet Fraction and Glycemic Control inDevelopment of Complications in Type 2 Diabetic Patients

Dr Sobia Ashraf

Co-Authors

Dr. Zunairah Mughal Dr. Hira Babar Dr. Sindhu Rehman

Objectives:

To determine the association of immature platelet fraction and glycemic control with the development of complications in type 2 diabetic patients

Methods:

It was a cross-sectional study conducted in the Department of Pathology, King Edward Medical University, Lahore from January 2020 to January 2021. All patients from 40-65 years of age of both genders diagnosed as type 2 diabetes with HBA1C levels done in last 3 months were included in our study. Detailed history and lab investigations of individual patients were obtained and analyzed using SPSS software.

Results:

Total 60 patients were included of which34 (56.7%) were male and 26 (43.3%) were females. The mean age of our patients was 43.12 years SD 6.421. Patients were divided in categories on the basis of IPF and HBA1C and correlated with comorbidities and any complications developed in 12 months duration. The patients with higher HBA1C and IPF develop complications of the disease showing a positive correlation (p value 0.004 and <0.01 respectively). A positive correlation of HBA1C is shown with MPV, PDW and platelet count however IPF did not show any significant relationship with HBA1C (p value 0.708).

Conclusion:

Glycemic index and IPF value are not correlated and should be used independently for disease progression and risk stratification.

OP: 06

Utilization of Neutrophil-to-Lymphocyte Ratio to Assess Recovery in Patients with Dengue

Nimrah Ishaque

Co-Authors

Muhammad Usman Siddique (MBBS), Ayisha Imran (MBBS,FCPS), N. A. Malik (MBBS,MPhil)

Objectives:

This study aims to assess recovery in patients with dengue by utilizing Neutrophil-to- Lymphocyte ratio (NLR) reversal i.e. increase in atypical lymphocytes in peripheral blood, forearly detection of transformation to DHF.

Methods:

The study was a cross-sectional study involving 141 patients diagnosed with dengue fever. The association NLR reversal with DHF was determined using Chi-square and Fisher's Exact test. Define Early and Late Reversal Groups.

Results:

There was no significant difference in mean Hemoglobin, Hematocrit and Total LeukocyteCount of Early-Reversal Group (14.2 ± 1.7), (43.1 ± 5.2), (3.8 ± 1.2) and of Late-Reversal group (14.7 ± 2.1), (45.1 ± 6.1), (4.5 ± 1.4). Mean of minimum platelet count observed in Early-Reversal Group was higher (49.2 ± 28.3)than Late-Reversal Group (19.3 ± 22.1) (p-value <0.05). Significant number of patients developed DHF in Late-Reversal Group (80.9%) than Early-Reversal Group (8.3%) (p-value< 0.05).

Conclusion:

There is no significant difference in age, hemoglobin, hematocrit and total leukocyte count of DF and DHF patients. Serial NLR can predict the hemorrhagic complications in dengue fever patients. Severe thrombocytopenia occurs in patients with late reversal of NLR.

OP: 07

Association between Mean Platelet Volume and Cardiac Troponin I Level in Patients with Acute Coronary Syndrome

Dr Sana Iqbal

Co-Authors

Dr Sadia Iqbal, Dr Mona Aziz, Dr Tooba Ammar, Dr Laiba Javaid.

Objective:

To determine association between Mean Platelet Volume and Cardiac Troponin I level in patient with Acute Coronary Syndrome.

To determine association between cumulative Platelet Surface Area and Cardiac Troponin I levels in patient with Acute Coronary Syndrome.

Methods:

Shaikh Zayed Hospital Lahore.A total number of 245 patients with suspected diagnosis of ACS were included. Blood samples were drawn from every patient at 12hrs of onset of symptoms for measurement of troponin I, MPV, Platelet count and platelet surface area.

Results:

The ACS was present in 95(64.6%) of males presenting with chest pain and 73(74.5%) of females. The median mean platelet volume for the cases with ACS was 10.3fl(9.8fl – 11.1fl) and without ACS was 8.9fl(8.5fl – 9.1fl). The difference was found highly significant with p-value <0.001.The sensitivity of MPV above 9.45fl(set arbitrarily) was recorded 95.2%(92.0 – 98.4) and accuracy was 96.3%(93.9 – 98.7), all measures given with confidence interval.the association between cumulative platelet surface area and cardiac troponin I was not statistically significant with p- value 0.273.

Conclusion:

MPV is significantly higher in patients with acute coronary syndrome. It has good sensitivity and specificity 95.2% and 98.7% respectively in ruling out ACS. MPV can help in early screening of the patients with ACS in emergency settings.

PP: 01

Frequency of WC Flags Generated by Automated HematologyAnalyzer in Diagnosed Cases of Dengue Infection

Ayesha Younas

Co-Authors

Mavra Fatima (MBBS, FCPS), Ayisha Imran (MBBS, FCPS), Nauman Aslam Malik (MBBS, MPhil)

Objectives:

To determine the frequency of WBC flags generated by automated hematology analyzers in cases of dengue diagnosed by serological tests. We also aim to compare the platelet count in the presence of different WBC flags.

Methods:

It was a cross sectional study, conducted at Chughtai Institute of Pathology. Total 1007 blood samples of serologically confirmed dengue patients in EDTA vial were obtained over a period of 03 months from September,2021 to November 2021.These samples were run through Mindray BC-6800 which displayed flags for white blood cells. WBC flags displayed were analyzed in correlation with findings of CBC and peripheral smear through careful statistical analysis of the observed parameters.

Results:

An abnormal WBC flag was displayed in all patients. The most common flag among these was atypical lymphocytes in 671 (66.6%) samples, followed by atypical lymphocytes + basophilia in 136 (13.5%), Atypical lymphocytes + neutropenia in 66 (6.6%), Atypical lymphocytes + lymphocytosis in 47 (4.7%), Atypical lymphocytes + lymphopenia in 31 (3.1%), Lymphopenia in 29 (2.9%), Atypical lymphocytes + monocytosis in 15 (1.5%), Lymphopenia + neutropenia in 9 (0.9%) and Neutropenia in 3 (0.3%) samples.

Conclusion:

WBC flags generated by automated hematology analyzer in a suspected dengue patient, especially during dengue epidemics can be used as a screening tool and can help in avoiding unnecessary serological testing.

PP: 02

High Fluorescence Lymphocyte Count as an Early Predictor of Severe Thrombocytopenia in Dengue Infection

Isma Imtiaz

Co-Authors

Aiman Mahmood Minhas (MBBS), Mavra Fatima (MBBS, FCPS), Ayisha Imran (MBBS, FCPS), Nauman Aslam Malik (MBBS, Mphil) Akhtar Sohail Chughtai (MBBS, FCPS)

Objectives:

We aim to assess the significance and correlation of the HFLC with thrombocytopenia during the course of dengue infection especially during day 1 to 5 of the infection.

Methods:

This is a cross sectional study and was conducted at Chughtai Institute of Pathology from August 2021 to October 2021. Total 312 patients, both males and females, who had NS1 positive confirmed dengue infection were included in the study. Their platelet count and HFLC were noted at the time of diagnosis using Sysmex XN-1000. Follow up CBC were analyzed for next 5 days to observe the severity of thrombocytopenia.

Results:

There is significant negative correlation between absolute HFLC and platelet count on day one to five of the infection. On receiver operator characteristic curve analysis, we found that HFLC < 0.5 x103/µL had 60% sensitivity and 71.8% specificity for severe thrombocytopenia (platelet count less than 50 x 103/µL on day 5 of the infection.

Conclusion:

HFLC is a negative predictive factor for severe thrombocytopenia and therefore can be used as an early predictor of disease progression.

PP: 03

Establishing the Role of Platelet Parameters as a Screening Test for Dengue Fever

Dr Iqra Tahir

Co-Authors

Dr. Saima Farhan (Associate Professor)

Objectives:

This study is conducted to determine the role of mean platelet volume, platelet distribution width, and plateletcrit for screening of patients with dengue fever.

Methods:

This was a retrospective observational study conducted during the recent outbreak of the dengue virus from August 2022 to November 2022. This was conducted in the General Medical dengue outdoors of The Children's Hospital & UCHS Lahore. 125 patients were selected by simple random sampling technique who fulfilled the sample selection criteria. A pre-structured proforma was used to collect the details of each patient. Blood samples of all the cases were collected on the second day of symptoms in K3 EDTA tubes and they were run on semi- automated Celtac-A hematology analyzer to get the platelet parameters. The serological tests including the NS1 antigen test, IgM, and IgG antibodies tests were carried out on the fourth day of symptoms to confirm the screened- out patients. Statistical analysis was done using SPSS software. The student t-test was applied, and a less than 0.05 p-value was taken to indicate a significant difference.

Results:

There were 74 males (59.2%) and 51 females (40.8%). Platelet count on Day 2 was seen below 150,000 in 89 cases (71.2%) while 36 cases (28.8%) had normal platelet count. 8 patients (6.4%) had platelet count <30,000, 25 patients (20%) had platelets between 30,000 to 100,000 while there were 100,000 to 150,000 platelets reported in 56 patients (44.8%). MPV and PDW were significantly raised in 92 and 107 cases respectively. On the other hand, the PCT was decreased in 82 cases. The serology testing including NS-1 and IgM was done on the 4th day and was found to be positive in 105 cases.

Conclusion:

Platelet parameters including MPV, PDW, and PCT exhibit changes at a very early phase of dengue

fever. Therefore, they prove to be useful markers for screening out patients with dengue fever.

PP: 04

Platelet Lymphocyte Ratio and Changes in Platelet Count in COVID -19 Patients and its Association with Disease Severity

Sunia Qasuria Khan

Co-Authors

Yasar Mehmood Yousafzai

Objectives:

To compare and correlate platelet lymphocyte ratio and platelet count in patients with Covid-19 in local patients. 2.Correlation with their symptoms and severity disease.

Methods:

The study was conducted at the Department of Hematology, Institute of Basic Medical Sciences (KMU) Peshawar. The sample size was calculated to be 54 using the OPEN EPI calculator formula for sample size calculation, however it was increased to 64.

Inclusion criteria: All positive cases of SARS Cov-2 by RT-PCR technique or patients diagnosed on HRCT. Exclusion criteria: Bacterial infections and other viral infections.

Results:

Of the 64 patients, 24(37.5%) were females and 40(62.5%) were males. The mean age of study participants of discharged cases was 57 years and of died cases was 66 years the minimum age being 31 years and maximum being 95 years. Duration of hospital ranging from 24 hours to 41 days. Most common symptom was dyspnea which was in 98% of cases, cough 81%, fever 73%, anorexia 70%, chest pain 16%, generalized body weakness 55%, irritability 20%, oral ulcers 5%, unconsciousness 11%, diarrhea and vomiting 3%, multiorgan failure and encephalitis 1.5%. The mean platelet level in our patients was 273.85, ±107.53x 109 cells/L. Mean neutrophils lymphocyte ratio was 15.22021±7.145085. However, the mean absolute lymphocyte count was 1.01578 ± .346835 ranging from 0.48 to 2.10. The mean platelet lymphocyte ratio was 318.89805 ± 161.637129, with minimum being 44.9 and maximum 1018.47. ROC curve of discharged patients showed sensitivity to test variables platelet count and platelet lymphocyte ratios showed Area under curve 0.661 and 0.574 respectively which is significant, while in died cases test variables Neutrophil lymphocyte ratio, Absolute lymphocyte ratio, total white blood cell and hemoglobin showed Area under curve

0.690,0.506,0.584 and 0.706 respectively which are significant values. Cox Regression analysis showed that 1. platelet count (HR 0 .997, 95%CI, .992-1.002, p value >0.05), 2. Platelet lymphocyte ratio (HR 1.00, 95%CI, 0.996-1.004, p value >0.05), 3. Neutrophil lymphocyte ratio (HR 1.052,95% CI, 1.002-1.104, p value <0.05), 4. Absolute Lymphocyte ratio (HR 0.692, 95%CI, 0.316-1.532 p value > 0.05).

Conclusion:

The financial burden to the individual patient and the country causes negligence in the proper care of the patient. Expensive and regular testing is only for the rich. A need for cheap, low cost and efficient testing is required to maintain proper & optimal care of patient. The variables discussed in this research are the outcome of a simple test called Complete blood count, when patient is accurately first diagnosed with Covid Pneumonia, platelet count & neutrophil lymphocyte ratio being both sensitive and significant can be used to determine the possible outcome and course of treatment for the patient.

PP: 05

Significance of Mean Platelet Volume in Dengue Patients

Dr Ashja Saleem

Co-Authors

Maryam Ramzan

Objectives:

To assess the significance of mean platelet volume in dengue virus affected individuals and its correlation with severity of dengue fever by assessing the fall in platelet count

Methods:

1000 dengue patients with positive NS1 antigen and platelet count <= 150x103/mm3 underwent routine complete blood examination on a Mindray BC-6800 six part haematology analyzer in this cross-sectional study conducted at Chughtai Institute of Pathology. Patients were divided in 3 groups based on their platelet counts being <20x103/mm3 , between 20x103/mm3- 100x103/mm3 and between 101x103-150x103/mm3. These basic parameters were gauged: haemoglobin, total leucocyte count (TLC), hematocrit, platelet count, and mean platelet volume (MPV).

Results:

In our investigation, we discovered that mean platelet volume of the dengue patients with platelet counts <20x103/mm3 was significantly lower as compared to means of other groups (9.73±1.07fl). The link between mean platelet volume (MPV) and peripheral thrombocytopenia was shown to be significant, with a P value of less than 0.004.

Conclusion:

MPV is an important indicator of progressive thrombocytopenia and serial monitoring of MPV with decreasing platelet counts can help to prevent severe bleeding complications of dengue fever.

PP: 06

VITT With Inactivated SARS-COV-2 Vaccine - Index Case

Dr Kanta Devi

Co-Authors

Dr Natasha Ali, Dr Nosheen Nasir

Objectives:

Case report of vaccine induced immune thrombotic thrombocytopenia thrombocytopenia in a 73-year-old gentleman who presented with pulmonary embolism and thrombocytopenia, two weeks after receiving inactivated COVID-19 vaccine. He responded well to non-heparin anticoagulation with complete resolution of symptoms and platelet count.

Methods:

Case Report

Results:

N/A

Conclusion:

We report the first case of VITT following inactivated SARS-CoV-2 vaccine based on clinical presentation of thrombosis and thrombocytopenia along with laboratory and radiological evidence. The patient responded to non- heparin anticoagulation with complete recovery of symptoms and thrombocytopenia in two weeks.

PP: 07

Efficacy of Platelet Indices Between Clonal Thrombocytosis and Reactive Thrombocytosis

Dr. Ayesha

Objectives:

To determine the efficacy of platelet indices as a tool for differentiation between clonal thrombocytosis and reactive thrombocytosis.

Methods:

Study Design: Cross sectional study

Place and Duration of Study: The study was carried out at Department of Pathology Combined Military Hospital Lahore for one year from Nov 2019 - Oct 2020.

56 subjects were included in Reactive thrombocytosis group and 56 in Clonal thrombocytosis group. Fresh blood in EDTA anticoagulant was analyzed to determine complete blood counts and platelet parameters (Platelet distribution width, mean platelet volume, Platelet large cell ratio, Plateletcrit) using the automated hematological analyzer Sysmex KX-21.

Results:

Mean age of the patients was 45.76 years with a range of 17-75 years. Assessing the cause of reactive thrombocytosis revealed that 20 (35.7%) was infection and 16 (28.5%) was iron deficiency anemia. In clonal thrombocytosis group 21 (37.5%) were diagnosed with Chronic myeloid leukemia, 13 (23.2%) with Essential thrombocythemia and 14 (25%) with Polycythemia rubera vera. Platelet indices were compared in clonal thrombocytosis group and the reactive thrombocytosis group. Mean platelet volume, Platelet large cell ratio and Plateletcrit were significantly higher in the clonal thrombocytosis group (p=0.001). Difference in Platelet distribution width was not found to be statistically significant in the two groups (p=0.07).

Conclusion:

Platelet indices were higher in the clonal thrombocytosis group. Along with platelet count, they can serve as an efficient and cost-effective method in differentiating between clonal and reactive thrombocytosis.

PP: 08

Chromogenic Assay of Factor XIII

Dr Babar Zaman

Co-Authors

Hamid Saeed Malik, Manzar Bozdar, Ayesha Khurshid, Rafia, Samia Shaffat, Muhammad Umar

Objectives:

Factor XIII deficiency (FXIIID) is an extremely rare bleeding disorder with clinical presentation as fatal hemorrhage such as intracranial bleeds to mild forms, comprising epistaxis. All routine coagulation tests are normal in FXIIID, which complicates the diagnosis of this disorder. Precise diagnosis requires more specific tests, including qualitative tests like urea clot solubility test and quantitative like FXIII activity assay to confirm the diagnosis.

Methods:

This was a cross-sectional study conducted in AFIP over a period of six months from Jan -Jun 2022. A total of 55 participants of all ages and both genders were included in the study. The data were expressed as mean + standard deviation, median interquartile ranges or percentages by Chi-square test. Statistical significance was < 0.05. A patient with suspected FXIIID was evaluated first by calculating bleeding time and CBC, coagulation tests including PT, APTT, TT followed by clot solubility test and FXIII activity assay.

Results:

Of the total 55 patients, 12 patients (21.1%) were of less than 1 year age, 28 patients (49.1%) were between age group 2-18 years and 15 patients (26.3%) were adults (>18 years). 22% of the subjects presented with umbilical stump bleeding and 21% with prolonged bleeding after surgery/trauma and 9% with ICB while 3 with miscarriages. The clot solubility test, was normal in 33 (60 %) of the subjects and abnormal only in 22 (40 %). Factor XIII activity assay was normal (50-150%) in 27.3%, and abnormal (<1-49%) in 72.7%. It was observed that the clot solubility method is sensitive to 1 to 5 U/mL of FXIII, i.e. it can detect very severe form of FXIIID but it cannot detect mild to moderate

FXIIID. The sensitivity of clot solubility test was 55% and specificity was 100%, while diagnostic accuracy was 67.3%.

Conclusion:

Clot solubility test, although cheap and easily available, can help in screening individuals for FXIIID but patients with mild to moderate FXIIID could give false negative results, therefore FXIII activity assay should be carried out in suspected individuals.

Transfusion Medicine

Blood Bank KPIs: How to Select, Develop and Analyze
Prof Dr Saba Jamal

Establishment of Plasma Fractionation Project in Pakistan

Prof. Hasan Abbas Zaheer

Globally there is a shortage of raw material (blood and plasma donors) for the Plasma Fractionation industry, mostly based in the West, due to aging population, increasing demand, Covid pandemic, Ukraine war etc. As a result, the global production of Plasma Derived Medicinal Products (PDMPs), which are classified as essential medicines by the WHO, is seriously threatened.

In order to address this grave situation, WHO has recommended that the Plasma Fractionation and Contract Fractionation initiatives be promoted in developing countries where there is excess of 'Recovered Plasma' which is mostly wasted due to non-utilization. In addition in most of the 'whole blood' donations, plasma is not separated since there is little demand for it and 'whole blood' transfused as such. The WHO is therefore encouraging the developing countries to use the 'recovered plasma' and the potentially available plasma as well as promote the collection of 'source plasma' to generate PDMPs through Plasma Fractionation technology. The PDMPs thus produced will be cost effective and meet the unmet needs of the concerned country and also enable them to export the excess production to the other countries. Presently, the PDMPs are inaccessible to the patients in LMICs due to high cost, lack of availability and also lack of awareness among the physicians, inadequate diagnostic system etc.

UPH Biopharmaceutical (Pvt.) Ltd. is a Joint Venture between Sinovac Biotec Ltd and the JW Group Pakistan. The JV has been incorporated in Pakistan as local company engaged in the field of life and health and committed to providing biological and related products for the health of the Pakistani people. It is devoted to the research, development and distribution of plasma products and human vaccines providing service to disease prevention and control. Establishment of a Plasma Fractionation manufacturing unit in Pakistan to provide affordable Plasma Derived Medicinal Products to the people of Pakistan and other countries is the flagship initiative of the UPH.

The proposed Project will be the first of its kind not only in Pakistan but also in the entire Islamic world except in Egypt. The Project is designed to strengthen the gains and achievements of the blood safety reforms implemented in Pakistan since 2008 from the platform of the Safe Blood

Transfusion Programme and supported by the German government and the technical assistance of the WHO. Briefly, UPH will in coordination and collaboration of the Punjab government and other provincial as well as federal government encourage establishment of Regional Blood Centers (RBCs) similar to the ones developed by the SBTP. The excess 'recovered and source plasma' from the public blood banking system and also from the quality private sector blood banks will be provided to UPH for Plasma Fractionation. Necessary technical support will be provided by UPH to improve the HR capacity, QA systems, Screening systems, missing equipment etc. Special efforts will be made to conserve the 'recovered plasma', process all whole blood donations for plasma and in addition also collect 'source plasma'.

To ensure a consistent uninterrupted source of plasma a national campaign to promote voluntary blood and plasma donations and Family Replacement donations as per the Blood Safety Acts, National Blood Policy and the WHO International Resolutions. Currently, the National Blood Policy for 2023-30 is being developed. Among the key areas being covered in the new Policy is lessons learned and experiences in SBTP Phase I & I, achievements of Public Private Partnerships in the project, Disaster Management, Climate Change, Pandemics like Dengue, Plasma Fractionation, Promotion of blood and plasma donations etc. The blood and plasma collection strategy of the project will be developed in the light of the new National Blood Policy. Benefits of the project are:

1. National security of the life-saving PDMPs will be ensured.
2. A certain percentage of the PDMPs produced will be made available to the government for the treatment of the hemophilia, immunodeficiency etc. patients in lieu of the plasma provided.
3. Provision of recommended effective treatment to the patients and less side effects leading to normal life style and life span in the affected patients.
4. Strengthening of the national blood sector.
5. Wastage of precious recovered plasma will be eliminated and utilized to prepare life-saving PDMPs.
6. Transfer of technology and employment opportunities especially for highly qualified scientists and professionals and in the Supply Chain and Logistics sector.
7. Foreign Direct Investment in the project will be US$150 million. Potential exports are estimated at US$ 120 million annually.

Plasma Derived Medicinal Products: What, Why and How?

Prof Brig Nuzhat Mushahid TI(M) Retd

Human blood is the source of multiple therapeutic products, including blood components for transfusion. Additionally, plasma is the source material for further manufacture of Plasma Derived Medicinal Products(PDMPs) that are produced at an industrial scale by fractionation of pools of plasma obtained from between several hundred to thousands of donors. The fractionation allows separation of plasma into various protein fractions, each with a unique clinical value that is purified and virus-inactivated therapeutic protein products. This achieves optimization of this highly valuable source material. PDMPs are also termed plasma derivatives, plasma products, or fractionated plasma products.

Sources of plasma for fractionation includes 'recovered plasma' obtained from a whole blood donation and/or 'source plasma' obtained by plasmapheresis intended for further fractionation into PDMPs. Toll plasma is an arrangement by which domestic plasma is processed by a fractionator licensed in a foreign country and PDMPs from this plasma are provided in return, according to predetermined contractual terms, for use within the country.

In 2010 the World Health Assembly, in resolution WHA63.12 on availability, safety and quality of blood products, listed PDMPs on the WHO Model List of Essential Medicines. This was to encourage governments to recognize patients' needs, assess clinical demand, ensure that blood products are optimally used by clinicians, and an adequate supply of those medicines at national level.Global supply of PDMPs, presently relies predominantly on plasma collected from compensated plasma donors in several high-income countries and may not be appropriate to implement in other settings. The countries that permit compensated plasma donation have implemented additional donor screening and donation testing strategies along with regulatory oversight to mitigate any potential increase in infectious risks that may be associated with compensation of donors and to monitor and safeguard the health of dedicated plasma donors. In addition, compensated plasma donation systems are managed in a way not to affect the well-established system for collection of whole blood from voluntary non-remunerated donors and the infrastructure to supply blood components for transfusion to domestic patients.

Investing in a well-organized, stably financed and appropriately regulated national blood system capable of generating quality plasma suitable for fractionation is a crucial incremental step towards eventual sufficiency of PDMPs in Low to Middle Income Country (LMIC). Sustainable access to PDMPs through preventing wastage and fractionation of recovered plasma from voluntary non-remunerated blood donors, should only be undertaken in the context of national

policies and effective regulations in support of domestic blood establishments. This must include recruitment of competent management and qualified personnel, implementation of a quality assurance system, technical infrastructure and resources. WHO suggests stepwise actions at national and international levels to assist countries in developing policies and domestically appropriate strategies to increase supplies of PDMPs through an economically sound fractionation programme of plasma collected in the national blood system; it provides guidance on the regulatory oversight of a fractionation programme of domestically collected plasma; and emphasizes engagement of local transfusion medicine experts and professional societies with the national blood transfusion system, and be closely involved in the decision-making process for capacity-building.

Since the guidance from international agencies and evidence encourages the scientific, systematic, step wise approach towards self-sufficiency in PDMPs that is supported by political will, governance and participation by professional societies, therefore this presentation is meant to create a dialogue in PSH and its members towards that direction.

Few basic essential questions are raised for brainstorming, if our country has to move towards quality recovered plasma, prevent the wastage of plasma, improve its safety, undertake contract or toll fractionation and after consolidation, move towards source plasma programme and finally consider fractionation.

The example of questions needing answers starts with formulation/revisiting national blood policy and strategic framework, incorporating steps towards the vision of self-sufficiency in PDMPs. The input by experts in transfusion medicine and competent legal aids has to assess adequacy of existing blood transfusion safety Acts to address the PDMPs. The implementation strategy requires strong leadership at all levels and regulatory framework that has desired capacity. The remuneration and collection of source plasma donation, funding and cost recovery model in present circumstances also calls for national dialogue, creative, innovative ideas and solutions to address barriers.

Blood product Inventory Management and Massive Haemorrhage Protocol
Dr Asad Hayat

Patient Blood Management and Hemovigilance in Government Sector Hospitals of Sindh by Regional Blood Centers

Dr Samra Waheed
Dr Kanta Devi

Patient blood management (PBM) encompasses all aspects of the transfusion decision-making process, beginning with the initial patient evaluation and continuing through clinical management. Haemovigilance is the systematic surveillance of adverse events in the transfusion chain, and encompasses activities that contribute to the safety and quality in the process of blood donation and transfusion. This presentation aims to discuss the problems we are facing in introducing these both concepts and managing them in government sector hospitals of Karachi.

Regional blood Centre Karachi (Fatimid foundation) has currently 3 hospital based blood banks; at Sindh government Qatar hospital, Dr Ruth Km Pfau Civil hospital and Sindh government Lyari general hospital. Our daily product turnover is around 150-200 bags.

Initially it was very difficult for us to start the concept of Haemovigilance and patient blood management. The expired blood, no temperature control or proper transportation, ordering of wrong blood products for patients, lack of voluntary donation and uncontrolled Cross match to transfusion ratio were few issues we had to face in the establishment of these HBB's.

From past 3 years, RBC-K is working on all issues and we have resolved majority of these issues. The key to this was communication, arranging the seminars, awareness sessions and CME's ward to wards and in associated medical colleges, hiring of lab attendants for blood distribution, campaigns for voluntary blood donation and providing the blood components timely. Our aim is to be more efficient in providing the transfusion services in those poor patients who don't have a penny to spend. Patient blood management requires haemovigilance system that is an integral

part of quality management in blood services, developed for continual improvement of quality and safety of the transfusion process. It covers process of blood donation, blood processing, blood transfusion and monitoring of transfusion related adverse events.

Regional Blood Centre Shaheed Benazirabad, established in October 2019 and has interlinked three operational hospital based blood banks at Nawabshah, Shahdadpur and Naushahro Feroz. We are currently working for other hospital based blood banks, at Dadu, Matiari and Umarkot.

Main aim of this project by Sindh blood transfusion authority is to maintain a chain of haemovigilance in Government hospitals. RBC Shaheed Benazirabad is currently working as per standard protocols and recommendations by AABB and has successfully achieved all the required parameters and has initiated a concept of patient blood management in Government hospitals without taking any cost. Last three years journey was very difficult for RBC Shaheed benazirabad with a goal to implement safe transfusion practices in Government hospitals and currently we are maintaining an effective patient blood management by arranging various awareness seminars and CME programs regarding transfusion indications and patient blood management in different clinical scenarios. By providing safe and screened blood, main aim of RBC Shaheed Benazirabad is to reduce frequency of transfusion transmitted infections which is a major health problem in interior Sindh.

Oral Presentation
OP: 01

Evaluation of Haematological Parameters and SARS-COV-2 IgG Antibodies in Neonates

Born to Mothers following COVID-19 Infection in Pregnancy

Dr Ihsan Alam Khan

Objective:

1. To evaluate the haematological parameters of neonates with mothers' positive antibodies to SARS-COV- 2 and neonates with mothers' negative antibodies to SARS-COV-2.
2. To quantify the transmission of SARS-COV-2 IgG antibodies from mothers to neonates

Methods:

2.1 Study participants:

The study was conducted after approval from Khyber Medical University, Peshawar ethical committee (Letter NO: KMU/IBMS/2021/4860). This cross-sectional study was conducted at Saidu Group of Teaching Hospital, Swat, and the Institute of Pathology and Diagnostic Medicine, Khyber Medical University between January 28 to June 28, 2022. Non-probability sampling technique was used to enroll study participants including mothers exposed to COVID-19 infection during the 1st, 2nd, and 3rd trimesters and their neonates of day 1. Mothers with a history of hematological disorders and those with diabetes, hypertension, cardiovascular diseases, and other significant comorbidities; vaccinated mothers, and non-consenting participants were excluded.

The study's objectives were explained before seeking written informed consent and complete clinical history. The clinical history questionnaire included details on (i) COVID-19 PCR results (ii) History of contact with a positive family member, and (iii) Symptoms of COVID-19 (flu-like illness) during pregnancy.

2.2 Sample collection and processing:

A 3 mL blood sample was collected, in an EDTA (Ethylenediaminetetraacetic acid) tube (Lot#210801, Golden Vac, China) and Gel tube/Clot Activator (Lot#210801, Golden Vac, China), from each mother at the time of delivery and the umbilical cord of their neonate at birth.

The sample taken in the gel tube was centrifuged at 4000 rpm for 5 minutes to obtain serum which was kept at - 80°C until further analysis. The sera stored at -80°C were thawed as per the standard protocol before SARS-CoV-2 IgG antibody quantification. The indirect Enzyme-Linked Immunoassay (ELISA) was performed per the manufacturer guidelines using Biotek Elx 800, (USA). The complete blood counts were performed on the whole blood samples of mothers and neonates collected in the EDTA tubes on the Sysmex XN 550 (Five Part Hematology analyzer, Japan).

4.3 Indirect Enzyme-Linked Immunoassay:

ELISA was performed using Vircell (REF. No.G1032, LOT.NO.20ECOG114, Vircell, Spain)

quantitative anti- SARS-COV-2 RBD IgG antibody kit as per the manufacturer's guidelines. The kit is based on the Indirect ELISA method with a sensitivity and specificity of 99%. A cut-off of <4 was considered negative and >6 was considered positive for SARS-COV-2 IgG antibodies. All the standards provided with the kit and samples were run in duplicates. To minimize the risk of non-specific detection, serum from the pre-COVID-19 era (samples collected in 2018 for an unrelated work and stored in the KMU biobank) were run as negative controls. Calculation of IgG levels was done using MS Excel (Microsoft, California, USA) as per the manufacturer's guidelines. Mothers and neonates with detectable (positive) IgG antibodies were termed seropositive while those negative as seronegative.

4.4 Statistical Analysis

Statistical analysis was performed using Statistical Package for Social Sciences software (SPSS; version 26.0®, USA). Mean ± standard deviation was calculated for the numerical variables while frequencies and percentages were for the categorical variables. SARS-COV-2 IgG transfer ratio was calculated using the formula: Cord blood IgG lev-els/maternal blood IgG levels x 100. Pearson correlation analysis was used to investigate the relationship between maternal and neonatal SARS-COV-2 IgG antibody levels. A comparison of hematological parameters between seropositive and seronegative mothers and neonates born to them was done using an independent sample t-test. A p-value of <0.05 was considered statistically significant. The linear regression model has been applied to determine the predictive value of maternal IgG levels to neonatal IgG levels, taking maternal data as dependent variables, and neonates as independent variables.

Results:

In this study, a total of 115 healthy, unvaccinated mothers-neonate pairs were included. Mean age of the mothers was 29.44±5.75 years with most women (68/115[59.1%]) between 26-35 years of age. In the study population, 88/115 (76.5%) mothers, and 83/115 (72.2%) neonatal cord blood samples tested positive for SARS-COV-2 anti- RBD IgG antibodies. The mean SARS-Covid-2 IgG antibody levels in maternal, and neonatal blood were 19.86±13.82 (IU/mL) and 16.16±12.90 (IU/mL), respectively. Maternal antibodies efficiently crossed the transplacental barrier in 81.3% of pregnant women. There was no significant difference between any of CBC parameters between seropositive and seronegative mothers, and between neonates born to seropositive and seronegative mothers.

Conclusion:

Maternal anti-SARS-COV-2 IgG antibodies are capable of efficient transplacental transmission to neonates. There is no difference in the hematological parameters of neo-nates born to mothers who have experienced uncomplicated COVID-19 infection during pregnancy.

OP: 02

Blood Bank Stored Red Blood Cells are Prone Lysis, and Cause Subclinical Inflammation when Transfused to Patients with Thalassemia

Dr Yasar Mehmood Yousafzai

Co-Authors

Dr. Najma Baseer, Dr. Tariq Masood, Dr. Usman Naeem, Dr. Muhammad Tahir, Dr. Muhammad Harris, Dr. Muhammad Hassan, Dr. Shahtaj Khan

Objectives:

Current blood banking guidelines allow the use of up to 42 days banked blood. Such prolonged storage might result in adverse outcomes for sick patients requiring multiple transfusions. There is a need to establish disease- specific guidelines taking into account hemodynamic stability, comorbidities, and factors that speed up red cell destruction (eg. Hepatosplenomegaly). This study aimed to determine mechanical, ultrastructural, and biochemical changes in bank-stored blood and alteration in clinical and laboratory parameters of thalassemia patients after transfusions of stored blood.

Methods:

We developed an in-vivo experimental model. Freshly collected blood bags were stored in a blood bank for up to 20 days. The following red cell parameters were assessed at five days interval (0, 5, 10, 15, and 20 days: Biochemical: Hb, MCV, iron, ferritin, free hemoglobin; Mechanical: Osmotic fragility, mechanical fragility; Structural: Scanning electron microscopy, ankyrin, and spectrin immunofluorescence staining. Subsequently, patients with transfusion-dependent thalassemia were transfused 7 days stored blood. Acute changes in body inflammation were measured using CBC, LDH, C-reactive protein, serum iron, and serum ferritin.

Results:

Remarkable alterations were seen in RBC morphology under light and SEM. From the 5th day onwards, multiple visible spicules were observed on the RBC's outer membrane, and more than 2/3rd cells were abnormal at day 20. There was a significant reduction in the RBC counts and hemoglobin concentration. A significant increase in OF and MF under isotonic conditions was noted on all time points compared to the fresh sample. Degradation of ankyrin and spectrin proteins was noted on red cells. Ten transfusion-dependent thalassemia patients were transfused with freshly collected (<2-days old) and 7-days stored blood. Stored blood resulted in a smaller increase in Hb compared to fresh blood. A significant increase in WBC count and C-Reactive Protein was observed in patients transfused with stored blood.

Conclusion:

Prolonged storage of blood results in increase in reduced mechanical and osmotic stability, abnormal red cell ultrastructure, and distortion of ankyrin and spectrin proteins. Transfusion of fresh blood raises markers of subclinical inflammation (WBC count and CRP). Morphologically abnormal and fragile stored cells may be prone to lysis under sheer stress. It is plausible that transfusion of such cells may result in rapid lysis in patients with hepatosplenomegaly.

OP: 03

Estimating Residual Risks of Transfusion Transmitted Hepatitis B Virus and Hepatitis C Virus in Pakistan: An Impact of Nucleic Acid Amplification Test

Dr Syeda Mah Ali

Co-Authors

Dr. Naila Raza, Dr. S M. Irfan

Objectives:

Despite extensive serological tests and strict safety measures the risk of transfusion-transmitted infections (TTIs) still exists. NAT as applied to blood screening offers much higher sensitivity which enables the detection of extremely low levels of virus in the blood. It is however currently available to a handful of centres due to the high cost. This study aims to establish the efficacy of NAT by assessing the residual risks of transmission of HBV and HCV with and without NAT testing.

Methods:

This was a prospective cross-sectional study which recruited blood donors from January 2020 to December 2022. All donors underwent routine serologic screening. Only serologically negative donors were tested for HBV and HCV by NAT. The residual risk (RR) per million donors was computed for viral infections in seronegative blood donors. It was calculated using the incidence/window period model.

Results:

A total of 59708 donors were included during study period. The overall prevalence of TTI's were: For HCV 1.7% (n = 1018), HBV 1.5% (n = 918), HIV 0.07% (n = 47), Syphilis 1.2% (n = 758) and

malaria 0.3% (n = 218). Out of 57759 seronegative donors, 34 NAT-reactive samples were identified with 3 cases of HCV, 31 HBV cases. NAT yield of HBV is 1 in 1863 with RR of 8.6 per million followed by HCV with NAT yield of 1 in 19253 and RR of 0.8 per million donations. NAT testing reduced RR for HBV by 48.9% and HCV by and 94.5%.

Conclusion:

NAT implementation has improved blood safety. Our study showed that 34 out 57759 cases were detected by NAT which were initially missed by serological tests. The yield of NAT in detecting viral nucleic acid in blood was higher for HBV than for HCV. The study suggest that the parallel use of both serology and NAT screening of donated blood would be beneficial in countries with high seroprevalence of these viral infections.

OP: 04

Rh Alloimmunization in Multi-Transfused Thalassemia Patients: A Single Center Study

Dr Ayesha Jamal

Co-Authors

Tooba Fateen, Nazish Saqlain, Fauzia Amir, Shazia Yasin, Javeria Fatima, Ayesha Khanum, Saima Farhan

Objectives:

To determine frequency of Rh alloimmunization among the patient of thalassemia with history of multiple blood transfusions.

Methods:

This study was conducted by consecutive sampling in six months duration from September 2020 to August 2021 at the department of Hematology and Transfusion Medicine, of University of Child Health Sciences, The Children's Hospital Lahore after IRB approval. Informed consent was taken. Direct (DAT) and indirect antiglobulin test (IAT) were performed along with Auto-control. Chemical Elution and auto-adsorption were done for samples with history of transfusion within one or three months respectively. Antibody screening was done for all samples and identification panel was used only in cases with positive antibody screen. The red blood cells samples showing Rh alloimmunization were phenotyped with Rh anti-sera.

Results:

Total 110 cases were enrolled with 59% male and 41% females with a mean age 6.15 + 3.6 years (range: 7 months to 14 years). Rh blood group allo-antibodies were detected in 10.9% (n=12) cases (anti-E in 3, anti-C in 5, anti-c and anti-e in 2 each). Among all these patients of beta thalassemia, spleen was enlarged in 79(71.8%) cases; around half of these were <5 years old. Around 96% had first transfusion <2 years. The frequency of patients positive on DAT, IAT and on anti-body screening was significantly related to the frequency of blood transfusion.

Conclusion:

Alloimmunization against Rh blood group antigens is not very uncommon in transfusion dependent patients of Beta-Thalassemia. The frequency of transfusions is affected in co-existing states. Extended matching with Rh blood group anti-sera as a pre-transfusion routine can prove beneficial for these patients.

OP: 05

Frequency of Bacterial Contamination in Platelets Concentrates in A Low Middle Income Country: A Single Centre Data

Dr Bhawna Kumari

Objectives:

To determine the frequency of bacterial contamination and the type of microorganisms identified in platelet concentrates at a hospital blood bank of a tertiary care center.

Methods:

This was a retrospective study, conducted at Aga Khan University Hospital (AKUH). The data was retrieved from blood bank computerized system for the number of platelet units prepared in the blood bank and the microbiology culture reports during past five years (2018-2022) Briefly, as per protocol, bacterial culture is done on all platelet units by combining samples from 5 platelet units. These pooled samples are sent to microbiology lab for performing bacterial culture using BacT/Alert system. A reactive pool undergoes pool resolution, and all five samples are separately cultured to identify the implicated unit with bacterial contamination. A true positive sample was the one that tested positive on both initial and final culture on the 5th day. While an initial positive result that became negative later was considered as false positive.

Results:

During the study period, a total of 117015 random-donor platelets units were collected and …… pooled samples were sent for bacterial culture. Initial results showed 216 positive platelet pools (0.18%). Of these, majority i.e. 208(0.17%) units were false positive while only 08 (0.006%) units showed bacterial growth on 5th day of culture as well. So, overall frequency of bacterial contamination in platelets was found to be 0.7/10,000 units. Most common organisms identified were gram positive rods, bacillus species (n=114 or 53%) and gram positive cocci, staphylococcus spp. (n=46 or 21%).

Conclusion:

The rate of bacterial contamination in platelet concentrates was less than 1 for every 10,000 platelet units. Main contaminants were environmental bacteria rather than endogenous from blood donors.

OP: 06

Blood Donor Selection and Deferral Pattern: An Important Tool for Blood Safety at A Regional Blood Centre in Pakistan

Dr Noore Saba

Co-Authors

Muhammad Nisar, MBBS, MPhil; Usman Waheed, PhD; Iqbal Muhammad, MPhil

Objectives:

Blood donor deferral is the lack of eligibility criteria among potential blood donors. Both temporary and permanent deferrals are associated with a reduction in donor pools and inadequate blood and blood components availability for transfusion. The frequency of blood donor deferrals differs widely, however, regardless of the frequency of donor deferral, it is pertinent to mention that donor deferral is a global issue being faced by most blood centres in both developing and developed countries. The study's objective was to evaluate and monitor the causes of blood donor deferrals at a Regional Blood Centre in northwest Pakistan.

Methods:

This was a retrospective study of blood donor deferrals at the Regional Blood Centre in Peshawar. The blood donor data were extracted from the ZAAVIA blood transfusion information system (BTIS) database. The information and data expropriated from the database comprised of those

from the donor medical history questionnaire, physical examination (e.g. haemoglobin estimation), TTI screening results, and a decision on deferral (temporary and permanent).

Results:

The study included a total of 42,570 potential donors presented for blood donation over a four years period (June 2016 –May 2020), out of which 41,817 donors met the inclusion criteria and donated blood. The total deferral rate was 6.37% (n=2,682). Among these deferred donors, 44.44% (n=1,192) were deferred temporarily whereas 55.56% (n=1,490) were deferred permanently. The leading causes of temporary deferrals included syphilis (14.16%), low haemoglobin (8.28%), and underweight (5.97%). On the other hand, hepatitis B (30.38%) was the main cause of permanent deferral followed by hepatitis C (21.59%). The general percentage of deferrals was higher among those less than 32 years of age (P<0.001), were females (P<0.001), and were first-time blood donors (P<0.001).

Conclusion:

Blood donor deferral was responsible for 6.37% of all blood donations. The findings of the current study demands adequate preventive strategies to address the prevailing causes of deferrals such as low haemoglobin levels and infections with HBV and HCV.

OP: 07

Peripheral Hematological Predictors of Morphological Remission/Hemopoietic Recovery in Plasma Cell Disorder (Multiple Myeloma) after Induction Chemotherapy

Dr Hamzullah Khan

Objective:

To determine the predictive values of peripheral hematological markers for remission/Hematopoietic recovery in cases of Plasma cell disorders/Multiple myeloma after induction therapy

Methods:

This prospective study was conducted in the department of Hematology, MTI Hayatabad Medical Complex, Peshawar. All cases of Plasma cell disorders referred to department for remission after taking induction therapy, irrespective of age and gender were included. Relevant information's were collected on a predesigned proforma prepared in accordance with the objectives of the study.

Results:

A total of 36 cases referred for remission of plasma cell disorders were included, with 21(58.33%) were males and 15 (41.66%) females. The mean with standard deviation of numerical variables were; Age (56+ 8 years), Hb% (11+ 2.3 g/dl), Reticulocyte count (0.9+ 0.5%) and plasma cells in the remission cases as 16+ 2.76%. Median of the TLC and Platelets in remission cases were 6275/cmm3 and 198000/cmm3 respectively. There was a significant association of remission with female gender as compared to male gender (p=0.05) while no such association was seen in age groups (p=0.57). We observed a statistically significant an inverse correlation of remission (in term of lower percentage of plasma cell in the bone marrow aspirations) with an increase in retic count (rs = -0.397, p = 0.053). A similar inverse correlation was seen between remission (plasma cell percentage) with TLC and platelet count that was not statistically significant(p >0.05). Reticulocyte count showed a higher clinical sensitivity for remission with an Area Under Curve (AUC) of 0.733 on Receiver Operating Curve (ROC).

Conclusion:

In cases of Plasma cell disorder (Multiple myeloma) with post-induction therapy, the peripheral blood values for an increased in Reticulocyte count predict the remission with 95% confidence. Remission favors Female gender more as compared to male gender in all age categories. No significant relationship was noted for TLC/ANC and platelet count to predict remission in plasma cell disorders.

OP: 08

Prevalence of Three Major Rh Blood Group Antigens (D, C, c) in the Blood Donor Population of Peshawar, Pakistan

Dr Akhlaq Wazir

Objectives:

After the ABO blood group system, Rh D, C, c, E and e are among the most clinically significant antigens, its warm- reacting antibodies cause moderate to severe hemolytic transfusion reaction and hemolytic disease of the fetus and newborn. The frequencies and immunogenicity of C, c, E and e are less studied in this part of the region. To prevent alloimmunization and its complications to Rh and K antigens, it is recommended that all childbearing-age females and patients with haemoglobinopathies should receive Rh and K matched antigens. Further, the known frequencies of Rh antigens guide the bench technologist to select a specific number of units to get compatible crossmatch units. With this background, we did a pilot study to identify the prevalence of Rh D, C and c antigens in Peshawar city and compared them within the country and abroad with both developed and developing countries.

Methods:

The Peshawar Regional Blood Centre, attached to six tertiary teaching hospitals, performed this prospective and cross-sectional study from August to October 2022. A total of 220 blood samples were randomly collected from healthy male and female voluntary blood donors. A 5% red cell suspension was prepared in 0.9% normal saline. Rh D, C and c phenotyping was performed by standard tube technique using monoclonal reagents and tested against known positive (heterozygous antigens from antibody screening cells) and negative antigens according to manufacturer instructions.

Results:

Out of 220 phenotyping tests performed for Rh D, C and c, we observed the prevalence of Rh D as 91.366% (n=201), Rh C 78.18% (n=172), and Rh c 44.09% (n=97).

Conclusion:

We observed distinct prevalence patterns in our region as compared to studies being done in Karachi city (D 97%; C 87%; c 57%), Saudi Arabia (D 86%; C 66%; c 78%), India (D 93.8%; C 85.4%; c 60.1%), and Iran (D 90.2%; C 75.9%; c 73.9%). We recommend that similar studies should be done on a larger scale including other Rh antigens like E and e. Further, the immunogenicity of these antigens and the adverse effect of their antibodies should be closely observed in pregnant, haemoglobinopathy, and other multi-transfused patients.

PP: 01

ABO Blood Group Discrepancies & Resolution in Pediatric Oncology Patients: Experience from a Tertiary Care Institution

Zunera Javed

Co-Authors

Nazish Saqlain, Tooba Fateen, Saima Farhan

Objectives:

To determine the frequency of ABO discrepancies in pediatric Oncology patients, categorize these discrepancies and document their resolution.

Methods:

It was a Cross-sectional study carried at the Department of Transfusion Medicine, UCHS & The Children's Hospital, Lahore from November 2020 to September 2021 after Institutional Ethical committee approval (IRB No. 1326/SAHS). ABO blood group discrepancies were assessed by tube method of blood grouping, using antisera A, B, AB & D for forward grouping and A, B, and O cells for reverse grouping. Auto control was also run. The resolution techniques were used accordingly. The collected data was checked for its completeness, consistency and accuracy before analysis which was done on SPSS version 26.

Results:

A total of 305 subjects were included with mean age of 6.34 ±3.1 years and male to female ratio of 1.7:1. Among them 200(65.5%) were diagnosed with Acute Leukemia and 105(34.4%) with Lymphomas and solid organ tumors. Blood group discrepancy was found in 5 (2.5%) cases of Acute Leukemia and all were of Group I which were resolved by increasing incubation period. The samples processed from Lymphoma and solid organ tumors diagnosed patients showed three (2.9%) discrepancies. Two cases of Group I discrepancies found, one of which was resolved by elution, antibody screening and identification and other by incubation at 37oC and correlation with transfusion history. One case was of Group II discrepancy which was resolved by incubation at 40 C for 30 minutes.

Conclusion:

ABO discrepancies occur in pediatric oncology patients. So, the interpretation of forward and reverse ABO blood grouping, identification and resolution of ABO discrepancies in these patients should be done very carefully to avoid any transfusion related adverse reactions.

PP: 02

Assessment of Iron Reserves in Blood Donors by Measuring Serum Ferritin and Hemoglobin coming to the Transfusion Services of The Children's Hospital

Dr Maryam Rana

Co-Authors

Tooba Fateen, Sehar Shamshad Ali, Nazish Saqlain, Saima Farhan

Objectives:

The aim of this analysis is to determine iron stocks by measuring serum ferritin in pre-donation male blood donors along with their relation with the hemoglobin concentration and frequency of blood donations.

Methods:

It was a cross sectional study done at the Immunohematology and Transfusion Medicine Department of University of Child Health Sciences, The Children Hospital Lahore from Aug 2021 to July 2022 after IRB approval. A total of 350 serum samples were processed to determine hemoglobin and serum ferritin concentrations after informed consent of participants. The study involved was performed on healthy blood donors. The method used was chemiluminescence for the simultaneous measurement of serum ferritin.

Results:

An aggregate of 350 serums were collected from the contributors in blood bank. Among them, 154 were the first- time donor and 196 were the frequent donors; the serum ferritin was markedly reduced in constant contributors. The mean value 105ng/mL was found in infrequent donors and 79.35ng/mL was found in frequent donors. There was no notable variance in hemoglobin of newbie and regular blood givers. However, a momentous variation in the pervasiveness of iron depletion between first time and regular donors is found.

Conclusion:

Blood donation has a noteworthy impact on iron stores and is one of the most important factors for iron shortage in contributors, specifically in those who donate blood again and again. Serum ferritin measurement ought to be incorporated in the blood donor preference especially in the evaluation of consistent blood givers to assure enough iron pools in the donor community in order to sustain a pertinent potential donor.

PP: 03

Dengue Seroprevalence among Asymptomatic Blood Donors in A Tertiary Care Hospital Blood Centre in Northern Pakistan

Ali Raza

Co-Authors

Usama Qamar, BS; Shamila Manzoor, BS; Akhlaaq Wazeer, PhD; Usman Waheed, PhD; Zahida Qasim, MBBS, DCP, MPhil

Objectives:

The most significant arboviral disease in the world, dengue fever, is caused by dengue viruses (DENV 1-4). The viruses are primarily transmitted by arthropod mosquito vectors of the Aedes genus (A. aegypti and A. albopictus). Dengue virus (DENV) transmission by blood transfusion is a significant route of viral acquisition during outbreaks. The prevalence of DENV markers among blood donors in Azad Jammu and Kashmir has never been evaluated. We conducted a pilot study to evaluate the seroprevalence of NS1 antigen positivity in a cohort of well- characterized blood donors during a DENV outbreak in Mirpur, Azad Jammu and Kashmir.

Methods:

This was a cross-sectional single-centre study conducted at the Mirpur Regional Blood Centre, from May to October 2022. A total of 1,050 donor samples were included in the study. The presence of DENV was studied by detecting NS1 antigen by enzyme linked immune sorbent assay (ELISA). Data regarding clinical, epidemiological, and demographic characteristics were collected from the donor history questionnaire and records.

Results:

In the study, the overall prevalence of NS1 antigen was 1.14%, with 12 positive samples among the 1,050 samples screened. Nine of them were males, while three were three female donors. All of them were in the age group <38 years. Half of the positive donors were detected during October,

the immediate post-rainy season in this part of the country. Two-thirds of the positive donors were from rural areas.

Conclusion:

Our results indicate that a significant proportion of the tested donors had experienced asymptomatic infection. More studies are necessary to evaluate the real prevalence of DENV viremia in blood donors and if specific measures are needed to routinely test the blood donors for DENV RNA during outbreaks.

PP: 04

Frequency of ABO Blood Group Discrepancies among Patients and Donors: Their Identification and Resolution

Ghazala Qamar

Co-Authors

Ayisha Imran (MBBS, FCPS), Nauman Ahmed Malik (MBBS, MPhil), Akhtar Suhail Chughtai (MBBS, FCPS)

Objectives:

The aim of this study is to determine the frequency of common ABO discrepancies among patients and blood donors at Chughtai Institute of Pathology (CIP) and the measures taken to resolve them. Thus, enabling timely prevention of undesirable events during transfusion of blood components.

Methods:

It was a Retrospective observational study analyzing disparity in routinely encountered ABO blood group tests at blood bank of Chughtai Institute of Pathology between Year July 2019 to June 2020. These were detected serologically in blood donors and patients, where discordant results of forward and reverse method of blood group or both were recorded and interpreted by agglutination viewer and microscopic analysis.

Results:

A total 20,401 blood groups were performed in blood bank of Chughtai Institute of Pathology, Lahore from the year July 2019 to June 2020. Both male and female patients were included for

ABO blood group testing. The male to female ratio was and age ranges from 6 months to 80 years. ABO blood group discrepancies were detected in 33 patients out of 20,401(0.161%). Most common type of discrepancy encountered was weaker reactions in Forward group particularly A type blood group due to variable antigenic distribution on red cells.

Conclusion:

It is essential to identify and resolve various blood group discrepancies to avoid Acute hemolytic transfusion reactions.

PP: 05

Identifying Significance of Confirmatory Supplemental Tests in Blood Donor Screening Algorithms

Dr Nazish Kashif
Co-Authors

Dr Neelum Mansoor, Dr Fatima Meraj, Dr Bushra Kaleem, Dr Saba Jamal

Objectives:

Prevention of transfusion transmissible infections (TTIs) should be a unified goal of blood banks working across the country. Various types of assays have been developed for use in blood donor screening over the past two decades. The aim of the study is to identify the accuracy of screening assays and unnecessary discard of blood products which will determine the effective utilization of FDA recommended confirmatory tests for blood donors.

Methods:

This retrospective study was conducted at the Indus Hospital and Health Network, Karachi. A total of 36004 blood donors were included in the study, from 1st January 2021 to 30th October 2022. Baseline screening performed for Hepatitis B, Hepatitis C and HIV using CLIA followed by discriminatory nucleic acid amplification (NAT) on individual sample. Confirmatory supplementary testing using FDA approved methods was performed by Neutralization Assay for Hepatitis B, qPCR for Hepatitis C and Genius for HIV.

Results:

Out of 36004 donors 274 (%), 227 (%) and 42 (%) were positive by CLIA for HBC, HCV and HIV respectively. Considering neutralization assay as gold standard, In case of 274 donors tested for the presence of HBsAg, the concordance observed between both the CLIA technique and qualitative PCR with quantitative PCR was high i.e. 93.4% and 96.7% respectively. For the

detection of HIV in 42 donors, 94.4% concordance was observed between the qualitative PCR and quantitative PCR but was quite low i.e. 28.6% for CLIA technique and quantitative PCR. Of the total 227 donors tested for HCV, there were only 78 donors whose samples could be tested quantitatively via PCR. The concordance observed between PCR and the three separate devices i.e. Abbott, Alinity, and Roche that employed the CLIA technique was low i.e. 24.4%, 33.3%, and 51.3% respectively. However, the concordance improved to 76.9% between NAT and quantitative PCR.

Conclusion:

CLIA gives relatively high number of false positives. Implementation of confirmatory supplemental testing can prevent permanent donor deferral, which occur due to false positive results of screening assays. Additionally, this algorithm will minimize unnecessary discard of blood products.

PP: 06

Transfusion Practices of Blood & its Components at Surgical Departments of LUMHS Hospital Hyderabad

Dr Aisha Waqas

Co-Authors

Dr Farhan

Objectives:

To assess Transfusion Practices of Blood at Surgical Department LUMHS Hospital Hyderabad.

Methods:

A Hospital based cross-sectional study done on surgical patients during 1st August 2022-30th October 2022 admitted in Surgical, Gynae&Obs, ICU Departments. Data were obtained by using a proforma. Blood utilization was calculated by CT ratio, %T and TI with Frequency of whole Blood, packed red blood cells, platelets and FFPs.

Results:

During study period total 5209 patients arrange 9593 units of blood and its component. Out of 9593 units, 5720 units were transfusing to 3520 patients, Male (57.60%) & Females (42.40%).

Overall ratio of CT, %T, TI were 1.67, 67%, 1.0 respectively. Whole blood transfusion (50%) were maximum at Gyne & Obs (29%) followed by packed red blood cells (25.50%), platelets (17.31%), FFPs (7.19%) while highest platelets (41%) and FFPs (63%)were utilize by ICU department. Highest rate of blood utilization was seen in Surgery (34%).

Conclusion:

Although current clinical guidelines recommend a restrictive transfusion practices, health care providers should have revised guidelines to minimize over ordering of blood transfusion and prevent its complications.

PP: 07

Interactive Whatsapp Interventions to Promote Blood Donations during COVID-19 Pandemic in Pakistan

Dr Akhlaq Wazeer

Co-Authors

Usman Waheed, PhD; Noore Saba, MBBS, MPhil; Zahida Qasim, MBBS, MPhil

Objectives:

The use of social media is an important strategy to raise public awareness about blood donation, especially during the lockdown during the ongoing COVID-19 scenario. The pandemic has caused a sizeable shortage of blood donations across the country. This scenario coupled with the budgetary issues for donor mobilization campaigns makes the quest for voluntary donations a challenge for the sector. This prompted a low low-cost strategy to cope with the potential blood shortages. WhatsApp is an important communication tool with many unique features. We analysed the use of WhatsApp for donor mobilization during the COVID-19 pandemic. To analyze the effectiveness of sending text messages and videos via WhatsApp in an attempt to increase the number of blood donations amid the COVID-19 pandemic.

Methods:

We conducted this cross-sectional study at the Department of Pathology and Transfusion Medicine, Divisional Headquarters (DHQ) Teaching Hospital, Mirpur, Azad Jammu Kashmir, Pakistan. During the last week of March 2020, three different types of motivational messages and four videos were sent through the WhatsApp group on alternate days to 1,248 potential donors registered with the hospital blood bank. These 1,248 potential donors comprised of 63.78% (n=796) males and 36.22% (n=452) females. The age range was 18 to 33 years. The reception desk was instructed to inquire from all forthcoming donors if they are visiting in response to the messages received through WhatsApp and note it down.

Results:
The results of the study were encouraging with 31.65% donors responding to the WhatsApp message and donated blood. Females exhibited a higher degree of response rate (42.25%) as compared to males (25.62%). The age range of the 'WhatsApp donors group' was 18 to 32 years with a mean age of 24.2 years. The majority (51.89%) of these donors were first-time donors while the remaining (48.11%) had donated at least once in the last year.

Conclusion:
The present study qualifies WhatsApp as a valuable tool to recruit the young donor population for blood donation purposes. Further quantitative and exploratory research studies are needed to see the impact of WhatsApp on the retention of these donors.

PP: 08

Comparison of SARS-COV-2 Antibodies Seroprevalence during 2nd & 3rd Waves of Covid-19 among Healthy Blood Donors of Khyber Pakhtunkhwa, Province of Pakistan

Dr M Nisar Khan
Co-Authors
Dr. Yasar Mehmood Yousafzai, Phd Haematology Dr Muhammad Arif, Mphil Haematology,
Dr Muhammad Ibrahim, Mphil Haematology

Objectives:
To determine and compare the SARS-CoV-2 antibodies seroprevalence during the 2nd & 3rd waves of COVID- 19 in Khyber Pakhtunkhwa, Province of Pakistan.

Methods:
The descriptive cross-sectional study was conducted during the 2nd& 3rd waves of COVID-19, at the Regional Blood Center (RBC) Peshawar, Pakistan. During the 2nd wave of Covid-19 (Nov 2020 to Jan 2020), 2,100 samples and 1,900 samples were collected during the 3rd wave from healthy blood donors. After TTI's screening by CMIA technique using Abbott Architect i2000 SR, all the seronegative samples were then screened for the presence of SARS-CoV-2 antibodies using ECLIA technique, by Roche Cobas e-411 analyzer. Cut off value of 0.99 was taken according to the kit manufacturer's recommendation. SPSS® version 24 was used for the statistical analysis. The Khyber Medical University Peshawar ethical committee endorsed the study.

Results:
During both waves of COVID-19, 4,000 healthy blood donors were screened. The age range was 18-60 years, with a mean age of 26.30 ± 7.05. Among the 2,100 samples of the 2nd wave of COVID-19, 1,176 (56%) were found positive for SARS-CoV-2 antibodies, while 65% (n=1,235)

seropositivity was recorded among the 1,900 samples collected during the 3rd wave of COVID-19

Conclusion:
This study was conducted among blood donors, who were found suitable for blood donation according to the WHO & National guidelines. The study findings showed an increase in the SARS-CoV-2 antibodies seroprevalence from 2nd to 3rd waves of COVID-19, indicating a positive sign toward achieving Herd immunity.

PP: 09

Detection of SARS-COV-2 RNA in Blood Donations

Dr Akhlaq Wazeer
Co-Authors
Usman Waheed, PhD; Noore Saba, MBBS, MPhil; Zahida Qasim, MBBS, DCP, MPhil

Objectives:
The COVID-19 pandemic is adversely affecting health systems across the globe. This includes overwhelming the blood transfusion services with reports of shortfalls in the number of blood units collected. Since the outbreak of COVID-19, there were concerns about the potential risk of transmission through the transfusion of blood and blood components. The SARS-CoV-2 belongs to the respiratory group of viruses that are not known to be transmitted by blood transfusion, and there have been no reported cases so far. However, during the early phase of the epidemic, the RNA of SARS-CoV-2 was detected in plasma. Therefore, the possibility of transmission by blood transfusion is worthy of consideration. This prompted us to do a pilot study to screen blood donations for SARS- CoV-2 collected in our blood bank at the divisional headquarters teaching hospital, Mirpur, Azad Jammu and Kashmir, Pakistan.

Methods:
We retrospectively screened whole blood donations collected during the 4-week period starting from 16th March to 13th April 2020. A total of 690 tests were performed on samples (were in storage at 2 - 8°C) for the presence of viral RNA through real-time RT-PCR (reverse transcription-polymerase chain reaction). A total of 140 µl of the donor's sample was subjected to RNA extraction using QIAamp Viral RNA Mini Kit (Qiagen, Hilden, Germany) following the manufacturer's instruction. Real-time one-step RT-PCR was performed targeting the ORF1ab and N genes of SARS-CoV-2. The kit (DAAN Gene Co., Ltd., Guangzhou, China) consists of an internal control system where Cy5 is labelled on an internal control gene probe and used to check the processes of sample collection, RNA, and PCR amplification, thus reducing false-negative results.

Results:

We identified two donor samples positive for SARS-CoV-2. The whole blood units had been separated into red cell concentrates (RCC) and fresh frozen plasma (FFP) but not platelet concentrates. Both FFPs were in the blood bank's inventory, while the RCCs were already transfused to two patients. Both patients, discharged from the hospital, were traced and called. They had not developed any post-transfusion symptoms related to COVID-19. Fresh nasopharyngeal samples were drawn from both recipients of RCC and were found negative for viral RNA. The two FFPs in blood bank stock were re-tested to see the viral RNA stability and found positive indicating the stability of RNA at minus 40oC in plasma. Both reactive donors were followed up by telephone, they had remained asymptomatic and were advised to limit contact and quarantine at home.

Conclusion:

Although the recipients of SARS-CoV-2 positive RCCs tested negative and had no symptoms, the potential risk may not be disregarded, more time will be required to conclude the level of blood safety interventions. Meanwhile, the blood bank has implemented the standard protocols to mitigate the theoretical risk of SARS-CoV-2 transmission through blood and blood component transfusions. The screening questionnaire for blood donors has been revised and additional questions incorporated such as asking about specific symptoms in donors or family members and a history of travelling to cities with reports of local transmission. Additional broad-based research is needed to further validate the survival of viral RNA in blood and blood components and its infectivity to recipients.

PP: 10

First Report from Afghanistan on the Prevalence of Blood-Borne Infections: A Retrospective Cross-Sectional Multicentre Study for an Epidemiological Assessment

Enayatullah Hashemi

Co-Authors

Usman Waheed, PhD; Akhlaaq Wazeer, PhD; Noore Saba, MBBS, MPhil

Objectives:

In Afghanistan, a country engaged in continuous humanitarian crisis, blood transfusions services are not consistent as per international standards. There is a dearth of available data from Afghanistan on the prevalence of blood- borne infections in blood donors. The present study was conducted to assess the prevalence of serological markers of common blood-borne infections among the blood donor population of Afghanistan.

Methods:

This was a cross-sectional study based on retrospectively collected data over a period of six years

from 284 blood centers across 34 provinces of Afghanistan. Every blood donor's sample was tested by rapid immunoassays for the serological markers of blood-borne infections namely hepatitis B surface antigen (HBsAg), anti-hepatitis C virus (anti-HCV), anti-human immunodeficiency virus 1/2 (anti-HIV1/2), and anti-Treponema pallidum (anti-TP).

Results:

A total of 956,509 individuals donated blood across 284 blood banks in Afghanistan between 2015 and 2020. Nearly 56.93% (n = 544,568) of the study participants belonged to the family replacement donor category while the remaining were voluntary non-remunerated blood donors (VNRBD) 43.07% (n = 411,941). Most of the blood donors 65.36% (n = 62,518) were first-time donors. The overall pooled prevalence of blood-borne infections was 4.36% with a comparatively higher percentage in family replacement donors 4.88%. The seropositivity for HBsAg, anti-HCV, anti-HIV1/2, and anti-TP was 2.95%, 0.81%, 0.04%, and 0.54%, respectively.

Conclusion:

Complete reliance on voluntary blood donors and screening with quality assured highly sensitive assay is recommended to ensure blood safety in the country. Additional studies are needed to detect the main risk factors and formulate intervention strategies.

PP: 11

Hepatitis C Virus Infection in Beta Thalassaemia Major Patients: A Cross-Sectional Study from Azad Jammu and Kashmir

Dr Akhlaq Wazeer

Co-Authors

Zahida Qasim,MBBS, MPhil; Usman Waheed, PhD; Amnah Shaukat,MBBS, MPhil; Wafa Hussain, MPhil

Objectives:

Infection with the Hepatitis C virus (HCV) is among the most serious complications in thalassaemia patients due to blood transfusion therapy. This may result in poor health status thus increasing the morbidity and mortality of beta-thalassaemia major patients. The progress and severity of liver fibrosis are intensely connected to the degree of liver iron overload and to the presence of chronic hepatitis C infection. As there is currently no vaccine to counter HCV infection, prevention of HCV transmission remains the mainstay while managing beta-thalassemia major individuals.

The aim of the study was to assess the prevalence of HCV and blood transfusion-related parameters in the thalassaemia cohort of Azad Jammu and Kashmir, Pakistan.

Methods:

The present study was descriptive cross-sectional, and comprised of 524 beta-thalassemia major patients who are being transfused at the Muzaffarabad and Mirpur Regional Blood Centres. The study was conducted from June 2021 through January 2022. The data were gathered through a questionnaire while the blood samples were tested for anti-HCV antibodies (chemiluminescence immunoassay) and confirmed by qualitative real-time PCR. Participants were clinically examined for hepatomegaly and splenomegaly and splenectomy. Pre-transfusion haemoglobin, alanine aminotransferase (ALT), and serum creatinine levels were calculated. The Epi Info™ 7 statistical package (CDC, Atlanta, USA) was used to record and manage data.

Results:

Of the 524 beta-thalassaemia patients, 16 (3.05%) were anti-HCV antibodies positive and confirmed by real-time qualitative PCR. All patients greater than 20 years of age had HCV infection. Hepatomegaly was observed in 78.9% of individuals with an average increase of 4.30 cm in liver size. Splenomegaly was observed in 64.8% of patients with an average increase of 4.38 cm in spleen size while splenectomy was observed in 9.5% of patients with serious health complications. The average haemoglobin count prior to blood transfusion was 8.2g/dl. Among all HCV positive beta-thalassaemia patients, the average ALT level was observed 89 IU/L; while among HCV negative individuals, the average ALT level was observed 69.5 IU/L. Likewise, among all HCV-positive patients, the average serum creatinine level was found 0.40 mg/dl; while among HCV-negative individuals, the average serum creatinine was 0.36 mg/dl.

Conclusion:

The presence of HCV is in the intermediate zone and showed a decreasing trend compared to the rest of the country. The trend of increase in HCV prevalence with an increase in patient age was observed. Raised ALT and hepatomegaly were seen in the majority of HCV-positive beta-thalassaemia major patients. Quality-assured screening assays should be used for blood screening before transfusion. A national thalassaemia policy and strategic framework need to be formulated.

PP: 12

Voluntary Donations are Safer than Replacement Donations

Dr Farwa Sijjeel

Co-Authors

Dr. Ahmreen Khalid (HOD of Pathology), Dr. Farah Hanif (HOD of Hematology), Muhammad Yousaf Khan (Biochemist), Basharat Nawaz (Technician)

Objectives:

To determine the prevalence of transfusion-transmissible infections - Hepatitis B Virus (HBV), Hepatitis C Virus (HCV), Human Immunodeficiency (HIV) and Syphilis - among family replacement donors and voluntary, non- remunerated donors in our population aiming to

compare the safety of blood donated by these two groups.

Methods:

Study Design: Quantitative Retrospective Comparative study.
Study Setup: Pakistan Institute of Medical Sciences Blood Bank, Islamabad.
Study Duration: Two year (April 2019-April 2021)
Sampling Technique: Non-random Convenient Study.
Sample Size: The present study was carried on a total of 72,968 donors, classified into two groups
Group 1: family replacement donors who donated blood at PIMS Blood Bank (35,504/ 48.6%).
Group 2: voluntary non-remunerated donors who donated blood to different organizations and Pakistan Sweet Home Blood Bank (37,464/ 58.4%).
Data Collection: Record of Pakistan Institute of Medical Sciences Blood Bank, Islamabad.
Data Analysis: SPSS 23.6
Sample Selection:
Inclusion Criteria:
Be in good general health.
Be aged 18 years or older but less than 60 years.
Weigh at least 45 Kg.
Have a hemoglobin level of at least 12.5 g/dl.
Not have donated blood in the last 3 months.
Exclusion Criteria:
Cardiac problems, hypertension, epilepsy, diabetes (on insulin therapy), history of cancer, chronic kidney or liver disease, bleeding tendencies, venereal disease.
Major surgery in the last 6 months or minor surgery in the past 3 months.
Jaundice or hepatitis or positivity for Hepatitis B or C viruses.
On therapy with regular blood transfusions.
Sharing needles to inject drugs/ having history of drug addiction.
Been tested positive for antibodies to HIV.
Females should not donate blood during pregnancy. They can donate after 6 months following delivery and when they are not breast feeding.
Females should not donate blood if they are having heavy menstrual flow or menstrual cramps.
Miscarriage in the last 6 months.

Results:

Of the total cohort of donors, 48.6% were family donors and 51.4% were voluntary non-remunerated donors. There was a highly significant difference in age and gender between the two types of donors with voluntary donors being much younger and including a much higher proportion of female donors than male donor's i.e 14% in Voluntary donors and less than 1% in replacement donors. The prevalence of HBV, HCV, HIV and syphilis were much higher in family

donors than in voluntary donors, with the differences being highly statistically significant. Our results revealed that the overall prevalence of transfusion-transmissible infections was significantly higher in family replacement donors than in voluntary donors.

Conclusion:

Our study clearly reveals that the overall prevalence of HBV, HCV, HIV and syphilis in voluntary donors is much lower than in family replacement donors. Voluntary donors are the best way of achieving the safest blood, as they are younger and have a better education, which creates awareness among them about the importance of donation and the risks of transmitting different viral infection.

Bone Marrow Transplant

An Update on Haplo-identical Transplantation

Maj Gen Dr Qamar un Nisa

Allogeneic hematopoietic cell transplantation (allo-HCT) is considered the only curative option for patients with various benign and malignant hematologic disorders. However, a major hurdle to transplant is the timely availability of a fully HLA matched donor. Due to the remarkable polymorphism in the human leukocyte antigen (HLA) gene complex, an HLA-matched sibling donor is available in only 30% to 35% of patients. The odds of finding a matched unrelated donor (MUD) in countries with access to donor registries, range from 79% for white patients to 20% in minority ethnic groups. On the other hand, related donors who share at least one haplotype are available for nearly all individuals. According to an estimate, 95% of the patients have at least one haploidentical (haplo) donor, and on average there are 2.7 haplo donors available for each recipient. This near universal availability makes haplo-HCT a particularly attractive option for patients who lack an otherwise fully matched donor or need an urgent transplant. It is especially useful for resource-constrained countries like Pakistan where unrelated donor registries are lacking.

In this talk, we will focus on historical and recent developments in this field and how these relate to our own experience of haplo HCT at the Armed Forces Bone Marrow Transplant Centre/National Institute of Blood and Marrow Transplantation (AFBMTC/NIBMT).

Myelofibrosis: to Transplant or not to Transplant

Dr Salman Fazal

Myelofibrosis is a serious hematological malignancy that is associated with poor survival. The median age of the disease is 67, and the median survival is seven years. The availability of JAKi in the treatment of myelofibrosis has changed the management of this disease over the last decade. The presentation highlights the benefits of available therapy. The presentation also highlights the role of allogenic transplantation, including careful patient selection, transplantation strategies and post-transplantation strategies.

Challenge of COVID-19 and HSCT

Dr Ayaz Mir

CAR T Cells Vs HSCT- are we there yet?

Dr Muzaffar Qazlibash

Advances in HSCT for Primary Immunodeficiency Disorders

Dr Zehra Fadoo

Oral Presentation

OP: 01

Fludarabine/Cyclophosphamide Conditioning Regimen in Aplastic Anemia PatientsReceiving Matched-Sibling Donor Transplant Is Non-inferior to ATG/Cyclophosphamide: A Single-Center Experience from Pakistan

Waseem Shahani

Co-Authors

Shafaq Abdul Samad, Tasneem Farzana, Uzma Zaidi

Objectives:

Comparison of Flu/Cy to ATG/Cy conditioning regimen in HLA matched sibling donor stem cell transplant in Aplastic Anemia. Overall survival (OS), relapse-free survival (RFS), and GvHD-free survival (GFS) were also the outcome of the study.

Methods:

A single-center retrospective analysis of 130 patients with Aplastic Anemia who underwent matched-sibling donor transplant was carried out at NIBD & BMT from January 2011 to December 2019. Patients with severe and very severe aplastic anemia who had negative chromosomal breakage analysis for Fanconi's anemia, no evidence of PNH clone, no evidence of MDS-related cytogenetic abnormality, ECOG performance status of 0-1, no major organ dysfunction, and negative viral serology were eligible for transplant.

Results:

The estimated overall survival (OS), relapse-free survival (RFS), and GvHD-free survival (GFS) were found to be 69.0%, 66.7%, and 64.3% in the ATG/Cy group while 76.1%, 72.7%, and 62.5% in the Flu/Cy group, respectively, after a median follow-up of 30 months.

Conclusion:

In this study, the Flu/Cy-based conditioning manifested comparable outcomes, conferring to the speculation; the OS, GFS, and RFS were similar and so were the incidences of PGF and SGF. Flu/Cy conditioning was well tolerated by patients in this study with very low regimen-related toxicity, either related to GvHD, infection, or venoocclusive disease, observed.

OP: 02

Pre-transplant Ganciclovir Prophylaxis to Prevent CMV infections in Allogeneic Hematopoietic Stem Cell Transplant Recipients

Dr Khadija Bano

Co-Authors

Dr.Daniyal Ahmad Ghani, Dr.Syeda Fatima Gillani, Dr.Ayaz Mir, Dr.Tariq Mahmood Satti

Objectives:

To determine the frequency of Cytomegalovirus reactivation and symptomatic infections with pre-transplant prophylactic ganciclovir versus no prophylaxis in patients undergoing allogenic haematopoietic stem cell transplantation.

To study the incidence of non-relapse mortality and overall survival for the first 100 days post-transplant in patients undergoing allogenic haematopoietic stem cell transplantation and receiving pre-transplant prophylactic ganciclovir versus those who received no prophylaxis.

Methods:

A total of 106 patients, who underwent allogenic haematopoietic stem cell transplant, were included in this study for retrospective analysis between 2017 and 2021. Patients who received ganciclovir prophylaxis were placed in Group A while those that didn't were placed in Group B. Ganciclovir was administered at a dose of 5 mg/kg twice daily seven days prior to transplant and ceased on the day of transplant. All patients were placed on acyclovir 400 mg twice daily from day 0 to day 100 of transplant. Patients received a weekly or bi-weekly test for quantitative serum CMV PCR till day 100 post-transplant. CMV reactivation was defined as a viremia of greater than 150 IU/ml. Data was analyzed using SPSS 26.0.

Results:

Ganciclovir prophylaxis was associated with a lower degree of CMV reactivation: 38 (61.3%) with prophylaxis versus 44 (89.8%) without prophylaxis, but with a higher rate of transplant related mortality, 14 (22.5%) with prophylaxis, vs. 4 (8.1%) without prophylaxis The increased transplant related mortality was likely due to primary engraftment failure in 7 (11.2%) with prophylaxis, while no cases of engraftment failure were seen without prophylaxis.

Conclusion:

CMV prophylaxis with ganciclovir is effective in preventing CMV reactivation at the cost of

increased transplant related mortality in the form of primary engraftment failure.

OP: 03

Oral Mucositis in patient undergoing Hematopoietic Stem Cell Transplantation: A Single Center Experience

Dr Muhammad Yousaf

Objectives:

To determine the factors affecting the incidence and severity of oral mucositis follows hematopoietic stem cell transplantation.

Methods:

Study Design: Descriptive case series.

Place and Duration of the Study: Armed Forces Bone Marrow Transplant Centre /National Institute of Blood and Marrow Transplant (AFBMTC /NIBMT) Rawalpindi, Pakistan from 1st September 2021 to 28th February 2022.

Total 72 patients who underwent allogenic stem cells transplantation during this period, fulfilling inclusion criteria were enrolled. Patients were analyzed based on history and examination for oral mucositis (OM) as per WHO mucositis scale, from start of conditioning chemotherapy till discharge. Total duration of mucositis and type of analgesia given were documented. Results were analyzed for OM and its association with risk factors like age, sex, conditioning chemotherapy, methotrexate for GVHD prophylaxis and prior history of irradiation.

Results:

Mean age of the transplant recipients was 21.9 ± 14years. Twenty-nine patients (40.3%) were younger than 15 years and (59.7%, n=43) were older than 15 years of age. Forty eight 066.7%) were male and twenty four (33.3 %) female. The most common underlying disease was beta-thalassemia major (30.6%, n=22), followed by Acute lymphoblastic leukemia (n=15, 20.8%), aplastic anemia (n=10, 13.9%) and multiple myeloma (n=8, 11.1%). Most of the patients (80.6%, n=58) underwent allogenic stem cell transplant, while autologous transplant was done in 19.4% (n=14). The incidence of mucositis in age group less than 15 years was 79.3% (n=23) compared to74. 4% (n=32) in those older than 15 years. Occurrence of mucositis was statistically significant in patients who received myeloablative conditioning regimen (85% vs 20%, p < 0.01), who had methotrexate as part of GvHD prophylaxis (91% vs 48%, p<0.01) and who had prior CSI irradiation (100% vs 70.2%, p =

0.01).There was no statistically significant correlation between stem cell dose (CD34/TNC) and mucositis. Severity of mucositis was more in Allogenic vs auto HSCT (p=0.04).

Conclusion:

Oral mucositis is a common but potentially debilitating complication of stem cell transplant, requiring opioid analgesia in a significant number of cases, irrespective of patient's age or gender. Myeloablative conditioning, use of MTX for GVHD prophylaxis and prior CSI are the major risk factors for mucositis in transplant patients.

OP: 04

Safety and Efficacy of Allogenic Hematopoietic Stem Cell Transplant in Inherited Platelet Disorders: A Single Center Experience from Pakistan

Asghar Ali Kerio

Objectives:

Inherited platelet disorders are heterogenous group of rare diseases with pleiotropic clinical presentation. Allogenic Hematopoietic stem cell transplantation (HSCT) is the only available curative option for most of these disorders with severe disease phenotype.

Methods:

To analyze the efficacy and safety of Allogenic HSCT in patients with Inherited Platelet disorders (IPDs), we conducted an observational, retrospective study at Armed Forces Bone Marrow Transplant Centre/ National Institute of Blood and Marrow Transplant (AFBMTC/NIBMT) Rawalpindi, Pakistan. From April 2018 till December 2022, a total of 28 patients of IPDs were registered at AFBMTC/NIBMT. Out of these,11 patients underwent allogenic HSCT and were included in the final retrospective analysis. IPDs were divided in two subgroups i.e Inherited platelets function defects and Inherited thrombocytopenias. Platelet function disorders were confirmed by Platelet aggregation studies and flowcytometry while Inherited thrombocytopenias were diagnosed on basis of clinical history and Bone marrow examination. Median time from diagnosis to HSCT was 730 days. Indication for HSCT was recurrent bleeding episodes, life threatening bleed, strong family history of life-threatening bleed and risk of disease progression in 54.6% (n=6), 27.4% (n=3), 9% (n=1) and 9% (n=1) patient respectively.

Results:

Median age of the study cohort was 9 years (range, 1 to 23 years). 64.6% (n=7) were male and 36.4%

(n=4) were female. Allogenic Bone marrow transplant was done for Inherited Platelet function disorders in 63.6%(n=7) patients and for Inherited thrombocytopenias in 36.4%(n=4) patients. All patients received HLA matched related donor HSCT. Stem cell source was Bone marrow harvest (BMH) and BMH plus peripheral blood stem cell (PBSC) in 91% (n=10) and 9% (n=1) patients respectively. Myeloablative conditioning i.e Bu 16 Cy 120-200 was used in all patients. Graft versus host disease (GVHD) prophylaxis was with Antithymocyte globulin (ATG) + Cyclosporin (CSA) + Short course Methotrexate (MTX) in 72.7%(n=8) patients and with CSA and MTX in 27.3% (n=3) patients. All patients achieved successful engraftment with median time to neutrophil and platelet engraftment was day +14 and day +22 respectively. At day +90, low grade stable mixed chimerism was seen in 27. 2% (n=3) patients, all were from Inherited platelet function disorders group although disease relapse in term of bleeding phenotype was seen in none of them. Incidence of acute GVHD grade I/II and moderate to severe chronic GVHD was 45.5% (n=5) and 18% (n=2) patients respectively. At a median post- transplant follow-up of 16 months (range, 1.5 to 40) OS, DFS and GRFS was 81.8%, 81.8% and 72.7% respectively.

Conclusion:

This retrospective analysis demonstrates that allogenic HSCT is a valid treatment option in IPDs with severe disease phenotype with good overall survival rate and acceptable treatment related side effects.

OP: 05

Incidence, Management and Outcome Of Hepatic Veno-Occlusive Disease /Sinusoidal Obstruction Syndrome after Hematopoietic Stem Cell Transplant in Thalassemia Major Patients

Haider Nisar

Co-Author

Memoona Khan, Tariq Azam Khattak, Tariq Ghafoor, Asghar, Qammar Un Nisa Chaudhry, Mehwish Gilani

Objectives:

Veno occlusive disease (VOD) or sinusoidal obstruction syndrome (SOS), is a post-transplant life threatening complication. In this study, we aim to discuss the incidence, management, and outcome of VOD in post allogenic transplant patients of Beta thalassemia major (BTM).

Methods:

A prospective study was conducted in Armed Forces Bone Marrow Transplant Center, between 2001-2022. A total of 385 patients of BTM were included in the study. All patients received HLA-matched transplants. VOD prophylaxis was done through Urodeoxycholic acid in all patients. Incidence of VOD was calculated through cumulative incidence estimates. Chi square test and Mann Whitney test were used to compare discrete and continuous variables respectively. VOD was diagnosed and graded according to EBMT Pediatric diagnostic criteria for VOD/SOS. Risk factors for VOD were grouped as: Recipient related: age, Pesaro classification, serum Ferritin, liver size, chelation, fibrosis and Hepatitis B and C status, Transplant related: chemotherapy protocol (dose and routine of administration of alkylating agent, Busulphan) and Donor related: ABO mismatch and gender mismatch. Univariate analysis was performed by log-rank test. All patients who developed VOD/SOS were managed with fluid restriction, strict input output monitoring. Only few were given defibrotide due to financial constraints. Statistical analyses were performed using SPSS v 25.0.

Results:

Out of 385 transplant patients, 40 developed VOD/SOS. 24 (60%) developed mild, 4 (10%) moderate, 2 (5%) severe and 10 (2.2%) very severe VOD. Median time from date of transplant till onset of VOD was 14 days (range 6-30). Cumulative incidence of all grade VOD was 10.39% (95% CI, 7-14). 11 out 40 patients who developed VOD died. Cumulative incidence of Transplant related mortality (TRM) for patients with and VOD was 20.5% (95% CI, 16.6-25.1) vs 27.5% (95% CI, 16.1-42) (p value 0.318)
respectively. Severity of VOD was significantly associated with outcome (p value 0.000). None of the risk factors except fibrosis (p value 0.000) was found to be significantly associated with VOD.

Conclusions:

VOD is an important post-transplant complication associated with high mortality in beta thalassemia major patients. Careful selection of transplant candidates and effective chelation before transplant can help reduce the incidence of VOD/SOS.

OP: 06

Utility of Automated Hematology Analyzer XN 1000 in the Detection of Malaria Parasites

Noorul Ain Fareed

Co-Author

Ghulam Fatima

Objectives:

Malarial infestation is the most common parasitic diseases present in developing countries. Malaria diagnosis may take more time as most of the laboratories still use microscopy for the detection of malaria parasite on Giemsa stained thick and thin smears. We can detect malaria parasites by the help of new automated hematology analyzers. As complete blood picture is one of the base line investigations invariably ordered in all patients with history of fever, and along with abnormal WBC scattergrams flags detection on hematology analyzers can be useful in the prompt diagnosis of malarial infestation.

Methods:

Total 100 smear positive malaria cases were taken and various hematological parameters and biochemical parameters were studied. A complete blood count and malarial parasite microscopy were performed for each patient.

Results:

100 cases were positive for malaria on peripheral smear. Various abnormalities in the WBC scattergrams, hematological parameters of these samples and the instrument flags for these samples were noted. WBC scattergram abnormalities typical of malaria showed a sensitivity of 85% and specificity of 93.26% for malaria diagnosis and RTDs using immunochromatographic assay showed a sensitivity of 90.91% and specificity of 98.92%.

Conclusion:

Detection of malaria by automated hematology analyzers is a relatively new concept and needs further refinement for making an accurate diagnosis. Awareness regarding scattergrams abnormalities typical of malarial infection increases the laboratory's efficiency in malaria diagnosis.

OP: 07

Clinico-Haematological & Molecular Characterization of Patients with Chronic Lymphocytic Leukemia

Dr Aisha Hameed

Objectives:

This study was designed to evaluate the clinico-hematological and molecular characteristics including IGHV, TP53 and NOTCH1 gene mutations in CLL patients. In addition, an attempt was also made to study their impact on clinical outcome, in terms of treatment response and 2-year overall survival.

Methods:

This prospective study included 46 newly diagnosed CLL patients. Patients were recruited from Inmol Cancer Hospital Lahore, Punjab, Pakistan. With informed consent, detailed history and physical examination of the patients was conducted. Before initiation of any treatment, blood samples were collected for complete blood count (CBC) with peripheral smear and morphology, lactate dehydrogenase, β2-Microglobulin measurement and serum protein electrophoresis (SPE) as well as for DNA extraction. After DNA extraction, mutational analysis for IGHV, TP53 and NOTCH1 genes was carried out. Patients with active disease according to IWCLL guidelines were treated. Treatment response to 1st line chemotherapy was checked at 6-months and recorded. Over-all survival (OS) was recorded from diagnosis to two years or last follow up or death whichever occurred earlier.

Results:

Demographic data of the recruited patients indicated the mean age at time of presentation was 60±11 years with male to female ratio of 4:1. Frequency distribution for main prognostic factors of clinical, laboratory and genetic origin were: advanced disease with Binet stages B+C (73.9%), elevated β2 microglobulin levels (37%), abnormal SPE (35%), unmutated IGHV (U-IGHV/U-CLL) (42.5%), TP53 mutations (17.4%), NOTCH1 gene mutations (4.3%) and del17p by FISH (11.8%). A total of 76.3% of patients required treatment and the overall response rate to first line therapeutics was 86.2%. The estimated median two years overall survival (OS) was 16.5 months. According to CLL-IPI system, 25% CLL patients were classified as low risk, another 25% as intermediate risk, 35% as high risk and 15% as very high risk. Among Cox proportional hazard models and survival analysis of all prognostic factors, the most important finding was significant association of mutated TP53 with dismal survival (HR = 3.90, median OS = 06 months, p = 0.04) and adverse treatment response (p = 0.01). Detrimental effects of mutated TP53 were more pronounced upon co-occurrence with advanced Binet stages, anemia, thrombocytopenia, elevated β2-microglobulin levels and U-IGHV. In contrast, no independent prognostic association of U-IGHV was evident. However, patients with U-IGHV showed a trend of poor OS. U-CLL was also significantly/tended to be associated with lymphadenopathy, organomegaly, advanced Binet stages, high LDH levels

and predicted poor OS when combined with other prognostic factors. Moreover, no differences in OS or baseline characteristics were evident according to SPE status. The OS curves for different CLL-IPI risk categories did not differ significantly from each other. However, with the increasing risk category of CLL-IPI from low to very high risk, a significantly decreasing trend in OS was observed.

Conclusion:

To conclude, this is the first comprehensive evaluation of clinic-pathological and genetic prognostics of CLL from Pakistan. Pakistani CLL has a relatively higher prevalence of biomarkers indicative of poor prognosis, including advanced stage disease, high tumor cell count at presentation, high β2-microglobulin levels, presence of TP53 mutations, and immediate treatment requirement, as compared to Western CLL. Our results also show that immuno-genetic/genetic (U-IGHV and M-TP53) factors, alone or in combination with clinico-pathological features (advanced stage, anemia, thrombocytopenia and elevated β2 microglobulin) represent significant predictors of overall survival/clinical outcome in CLL patients. While, clinical utility of CLL-IPI scoring system in Pakistani CLL patients needs to be elucidated in further studies with larger sample size.

OP: 08

Utilization of Chronic Lymphocytic Leukemia - International Prognostic Index (CLL-IPI) for Prognostic Stratification in Newly Diagnosed CLL Patients

Dr Noor ul Huda AlHadi

Objectives:

To score newly diagnosed patients of CLL according to CLL IPI presenting at a tertiary care hospital for risk stratification and better guide invidualized management

Methods:

This ongoing cross sectional study was Conducted In Haematology department, Armed Forces Institute of Pathology from December 2021 till date. Newly diagnosed CLL patients were included. Clinical staging of each patient was done. Five variables of each patient included age, serum β2-microglobulin levels (<=3·5 mg/L vs >3·5 mg/L) , immunoglobulin heavy chain variable region gene mutation status (mutated vs unmutated), presence of del [17p] on FISH as well as the clinical stage (Rai / Binet) that included haematological parameters of total leukocyte count, haemoglobin, platelets and examination findings of lymphadenopathy and/or organomegaly. The sum of these scores identified patients in 4 subgroups: low risk (0-1 points), intermediate risk (2-3), high risk (4-6), and very high risk (7-10). Statistical analysis was performed using the SPSS software package version 26.0. The assigned risk score for each factor was included in the final multivariable analysis.

Results:

46 newly diagnosed patients were included in the full analysis dataset. Meanageof patients was 59.8 years. 38 (82.6%) were males and 8 (17.3%) were females. On clinical staging, 14 (30.4%) in Rai stage 0, 10 (21.7%) in Rai stage I, 14 (30.4%) patients in Rai stage III, 8 (17.3%) patients in Rai stage IV. Del [17p] was detected in 04 (8.6%) and 30 (65.2%) patients had unmutated IGHV gene rearrangement. The CLL-IPI score identified 12 (26.0%) patients in low risk, 14 (30.4%) patients in intermediate risk, 14 (30.4%) patients in high risk and 4 (8.6%) patients in very high risk respectively.

Conclusion:

The CLL-IPI combines genetic, biochemical, and clinical parameters into a prognostic model. The utilization of CLL-IPI in our setup will help more accurate prognostic stratification and guide individualized management in clinical practice.

Laboratory Hematology

Advances in Laboratory Techniques of Hematology

Dr Arshi Naz

Since last one decade significant advances were introduced and followed in diagnostics and research labs for better and timely diagnosis of different haematological disorders included benign and malignant. Although causing an overwhelming rise in testing demands, the availability of skilled technologists and specialists has been diminishing. Journey of advancement from cellular descriptions to different types of artificial intelligence and Omics are involved to get accurate diagnosis of almost all unknown haematological disorders quickly with least labor. These techniques have own strength and weaknesses according to economical constraint and technical expertise but it's a need of time and better management. Acquired data from different techniques can be useful in all aspects of clinical practice including diagnosis, prognosis and prediction of response to specific treatments, as well as in the development of novel targeted treatments for patients with haematological disorders.

Research Grants in Laboratory Hematology; Opportunities and Proposal Writing

Dr Javeria Aijaz

This presentation will introduce factors to be considered before starting a research grant application, planning of the write-up, components of a grant application, as well as guidelines for framing a need statement. Opportunities available for research projects funding will also be briefly discussed. At the end of the presentation, participants will be able to identify the key factors to be considered when planning, and writing a research grant application, as well as identify some common pitfalls of such applications.

Interpretation of Cell Population Data of CBC and Machine Learning

Dr Zeeshan Haider

The 'CBC analyzer' and 'Hematology analyzer' are generally replaceable for each other, is it just a matter of misnomer practices? Trust me! Isn't. Again, the scope of 'CBC testing' and 'hematology testing' can be replaceable to each other, is it just a matter of misinterpret-practices? Trust me! It is. Here, the trust of 'Isn't' and 'It is' is largely built after the introduction of extended analytical channels in modern CBC analyzers. These extended analytical channels are now generating real-time '3- Dimensional (3-D)' details of normal but immature as well as abnormal blood cells, under the title of cell population data (CPD). The opportunities and challenges of such high dimensional data like CPD can be an extended deviational patterning (fingerprints) and interpretation of the practicable disease-specific patterns, respectively. The indicated deviational patterning and next recalling of matching pattern from all combos (library) for the test sample are nearly beyond the bound of possibility for any human neuron but not for artificial neurons. A total of 5,800 presentations at a tertiary care hospital (National Institute of Blood Disease, Karachi-Pakistan) were anonymously outputted and labeled by findings from peripheral blood film examination before the pre- and processing stage of machine learning. The result showed various interesting findings, where 'dare' was '67' labels (study groups) and 'truth' remained '85%' accurate prediction. Aimed 'cost-effective early prediction', to achieve diagnostic applicability in early course of hospital presentations may only be possible by using diagnostic data readily available through modern analyzers before the speck of multiple confirmatory tests.

Pre-Analytical Errors in Laboratory Haematology

Prof Dr Shahtaj Masood

Quality management is an essential component of every laboratory to maintain its quality,

reliability and reduction of errors. Laboratories should try to maintain good quality control. Quality assurance provides confidence that the process fulfils quality requirements. Requirements of quality are verified by operational techniques.

Pre-analytical, analytical, and post-analytical phases are the three components of total quality management. Pre-analytical phase in hematology laboratory starts from the ordering of the investigation by the clinician till it is analyzed and reported in the laboratory. It includes multiple steps from proper filling of the requisition form, sample collection, transportation, and processing. Although efficiency of the analytical phase is the main focus of quality indicators, pre- and post-analytical phases are found to be more associated with errors. It has been observed that pre-analytical errors range from 60% to 80%, while analytical errors constitute only 7%–13% of the estimated proportion of laboratory errors. The impact of these errors may not only be related to delay in diagnosis and treatment with inconvenience to the patient but at times may also endanger patient's life and safety.

Thus, it is essential that pathologists are aware of the confounding factors that may lead to these errors with the knowledge of reducing them to improve the quality of the laboratory.

A study conducted on 25,15,583 samples over a period of 4 years showed pre-analytical errors were 13,031 comprising 0.51% of total hematological investigations. The most common error observed was due to clotted samples (40.3%), followed by hemolyzed samples (15%) and incomplete or wrongly filled requisition forms (10%).

Conclusion: Pre-analytical phase forms an integral part of total quality management system, and its analysis is essential to minimize the errors in hematology lab. The quality of blood sample with completely filled requisition forms and prompt transportation of sample to the lab are essential components to avoid pre-analytical errors. In addition, continuous training and

acknowledgement of non-conformance with root cause analysis is the basic key for reducing errors and improving quality of hematology laboratory.

Updates on the 5th edition of WHO Classification of Hematolymphoid Tumors with emphasis on Myeloid Neoplasms

Dr Jawad Kazmi

The World Health Organization (WHO) classification of tumours is an evidence-based classification of cancers occurring within various organ systems. It is a standard for diagnosis, research, cancer registries, and public health monitoring worldwide.

The last edition of the haematolymphoid classification dates back to 2008 and was revised in 2017. The aim of this talk is to provide an overview of the new edition of the WHO classification for myeloid tumours.

Oral Presentation
OP:01

Pulmonary Complication Following Blood Transfusion

Subuhi Raza

Co-Authors

Dr Bushra Moiz

Objectives:

This study was designed to analyze the incidence and spectrum of adverse effects of blood transfusion with a focus on respiratory complications. This baseline study will help in developing preventive strategies for such effects.

Methods:

During the period from 2021 January to December 2022 all the adverse events related to transfusion of blood and blood components in various clinical specialties were recorded. They were analyzed and classified based on their clinical features and laboratory tests. SPSS version 19 was used for statistical evaluation.

Results:

During the study period, a total of 75,183 blood products were transfused and 178 reactions (0.23%) were reported to blood bank. There were 18 (10.1%) patients including 8 females and 10 males with a mean(±SD) age of 47.6 (±20.7) years who had respiratory symptoms. There were only 3 patients who had transfusion associated cardiac overload (TACO) and were regarded as primary reactions. Remaining were classified as secondary to other transfusion reactions and included anaphylaxis (n=1), febrile non-hemolytic transfusion reaction (n=4) and allergic reactions (n=5). Breathing symptoms remained unclassifiable in 5 patients. Most implicated blood products for pulmonary complications were red cells (n=15) and plasma (n=3). No mortality was observed with any pulmonary transfusion reaction.

Conclusion:

We observed that 10.1% of transfusion reactions had pulmonary manifestations. It is important to recognize and report respiratory symptoms during blood transfusion. This will help in developing and implementing preventive strategies in the hospital.

OP: 02

BioNet Dataset: AI-Based Diagnostic Solutions Using Peripheral Blood Smear Images

Usman Ali Shams

Co-Authors

Isma Javed (PhD), Muhammad Fizan (PhD), Aqib Raza Shah (MS) Muhammad Asif Naveed (FCPS, PhD)

Objectives:

To obtain a blood cell detection dataset called Deep Bio-Net dataset, which is labeled, annotated and publicly available.

To develop Artificial Intelligence (AI) neural network for automated blood cell classification from the obtained Deep BioNet Dataset.

Validation of AI neural network taking expert hematologists as a gold standard.

Material & Methods:

It was a descriptive study comprising of mainly three steps include preprocessing, processing, and post-processing steps; in the preprocessing step, we take blood from healthy volunteers in the EDTA vial and prepare a peripheral smear from it with the Hema-prep, an auto slide maker to neutralize the chances of error, upon fixation we stained it with Lishman stain and made it ready for dataset image capturing.

A) Preparation of blood smears and imaging:

A total of 55 blood smear images were prepared from both male and female gender with the age range of 15 to 55 years to take the images of platelets, RBC, and WBC (neutrophil, monocyte, lymphocyte, eosinophil). The selected slide was fixed in the methanol for 2-3 minutes according to the SOPs given and stained with Leishman stain for 30 minutes in a buffer mixture with acidic pH. Finally, the slide was washed with a finger and allowed to dry. The washed slide is then visualized on the Olympus BX53 microscope having a 100X oil immersion lens, and the Olympus EP50 Camera took photographic images via its integrated software for the PC. A total of 2080 images were captured with the mounted camera, then labeled for training with a resolution of 640x480px and a depth of 96 dpi. The dataset was divided into 80 percent trained, and 20 percent tested datasets.

B) Network Architecture:

We use YOLO, a deep learning neural network model, one of the lighter versions. First, the annotated pictures are fed into a network of convolutional layers, followed by max pooling; each time several filters are increased, dense and fully connected layers are added at the end of the

network via SoftMax for the activation function.

C) Training:

The proposed network is trained on our customized dataset with a batch size of 32 ad 64 with 100 epochs and a learning rate of 0.001 to achieve satisfactory accuracy.

Results And Discussion

We first trained the model with the annotated images with its sub-classification of different blood cells with the proposed method. The results obtained were satisfactory and validated from our customized dataset. The accuracy obtained was 98.5% from our customized dataset compared to the previous open-source, available dataset like BCCD, LISC, etc. In this model, we feed 80% of images for the training purpose threshold where the ground truth was known. Then, we use our model to count the various cells in the validation dataset with varying confidence thresholds.

Conclusion

The conventional manual method for counting different blood cells is a time-consuming process and requires expertise. The development of such a model and system will help us to calculate the red blood cells, platelets, and white blood cells; the flaw in our model is that it cannot classify WBC into its classes to clarify the quantity of each specified class of WBC. Moreover, our model is so powerful that it can predict the tiny particle of platelets so that we can go for thrombocytosis and thrombocytopenia diagnosis on time for the welfare of patient healthcare. For red blood cells, we suggest that Mean cell volume can be calculated from the size of red blood cells so microcytic and macrocytic anemia can be identified, and HCT can roughly be calculated from the count of RBC and MCV as well.

OP: 03

Differentiating Between Dengue Fever and Malaria Using the Hematological Parameters

Anila Zafar
Co-Authors
Dr Bushra Moiz

Objectives:

Dengue fever and malaria are two major public health concerns in tropical countries such as Pakistan. Early differentiation between dengue and malaria could help clinicians to identify patients who should be closely monitored for sign of dengue hemorrhagic fever or sever malaria. This study aims to build knowledge on hematological parameters and morphological findings which can discriminate these two infection.

Methods:

A cross sectional retrospective study was conducted at Aga Khan University hospital karachi in section of Hematology in September 2022. Subset for malaria parasite for malaria positive and dengue were made and differentiated on basis of hematological parameters and morphology in total no. of CBC E.D.T.A samples received in September 2022.Out of 100698 of samples, 230 were included in study which demonstrated reactive lymphocytes and we're correlated with the results of dengue antigen(NS1), 2403 requests of Malaria Parasite were received during study period, and was included in study.

Results:

In the group of reactive lymphocytes 180 (78%) sample were positive for dengue antigen, 50 (22%) were negative. Out of 2403 Malaria Parasite requests,110 come out to be Positive, P.Vivax 102 sample while P.Falciparum was only seen in 8 samples, 2293 results were Malaria Parasite not seen.

Conclusion:

This study conducted that several hematological parameters could differentiate dengue fever from malaria. A decision that using observing malaria parasite in peripherals film and hematological parameters, such as thrombocytopenia, neutropenia, leucopenia and morphological findings (reactive lymphocytes with left shift neutrophils) can discriminate patient with dengue and malaria infection.

OP: 04

Frequency of Aspirin Resistance and its Association with COX-1 Gene Polymorphism rs1330344

Iqra Rabbani

Co-Authors

Dr. Ali Amar (PhD), Mr. Ghulam Mustafa (M.Phil), Mr. Shabbir Hussain (M.Phil), Mr. Faheem Shehzad (PhD) and Dr Muhammad Asif Naveed (MBBS, FCPS, PhD)

Objectives:

This investigation looked into the relationship between aspirin sensitivity and the COX-1 rs1330344 T/C single nucleotide polymorphism in IHD patients (SNP).

Methods:

This study comprises 180 IHD patients over the age of 18 who had been taking 75 mg of aspirin daily for more than a week. The samples were collected from the Sheikh Zayed Hospital, Lahore. Platelet aggregation studies (AggRAM HELENA) and serum Thromboxane B2 (TXB2) Elisa were carried out to determine aspirin responsiveness. The COX-1 (rs1330344) polymorphism was genotyped by PCR-RFLP technique.

Results:

Between the aspirin-resistant (n = 106) and non-resistant group (n = 74), there was no statistically significant difference in the demographic, clinical and laboratory (Hb, Hct, Platelets, and TXB2 Elisa) characteristics. In the allelic model for COX-1 rs1330344 association with aspirin resistance, the frequency of the C allele was higher in the aspirin non-resistant group as compared to the resistant group (OR=0.46, 95%CI =0.30-0.72, P= 0.000). In the genotypic model, the CC genotype showed a significant inverse association with aspirin resistance (OR=0.34, 95%CI =0.16-0.72, P= 0.009). When compared to the TT-TC genotype in the recessive model, the CC genotype showed a significant difference between the two groups (OR=0.34, 95%CI =0.17-0.69, P= 0.002).

Conclusion:

The frequency of aspirin resistance was found to be 58.4% by aggregation studies and 9.4% by ELISA. The genetic analysis concluded that the CC genotype of COX-1 rs1330344 was inversely associated with aspirin resistance in Pakistani IHD patients.

OP: 05

Assessment of severity of bleeding by using ISTH BAT questionnaire in hemophilia patients

Madiha Abid

Co-Authors

Sidra Zafar, Naveena Fatima, Munira Borhany

Objectives:

The aim of the study was to assess the utility of ISTH-BAT in diagnosis, determining severity, comparing bleeding score (BS) in adult and pediatric groups and investigate its association with plasma factor levels.

Methods:

ISTH-BAT was used to assess BS in a total of 130 patients, 90 with hemophilia A, and 40 with hemophilia B compared and in 100 healthy controls.

Results:

BS was significantly higher in HA and HB patients as compared to controls (P value<0.001), but did not differentiate between HA and HB patients (P-value=0.738).7/20(35%) and 9/13(69.2%) were adults in newly diagnosed HA and HB cases respectively. Statistically significant differences were observed for BAT scores between severe and mild group (P=0.004) and severe and moderate group (P=0.012). The BS was very similar in newly diagnosed compared to known hemophilia patients, lower in pediatric compared to adult and higher in severe compared to mild HA patients. Bleeding scores were higher in hemophilia patients compared to controls

Conclusion:

The ISTH BAT can help identify hemophilia patients by distinguishing between affected and unaffected individuals with bleeding. Our study found no major difference between the scores in known and newly diagnosed patients.

OP: 06

Why Excessive Transfusion When Limited Can Work-An Experience from Pakistan

Laraib Majeed

Co-Authors

Naveena Fatima (MSPH), Anum Khalid (Mphil), Nida Anwar (FCPS)

Objectives:

In this regard we aimed to observe the frequency of genuine and non-genuine transfusion at our hospital and also to compare the outcomes of liberal and restrictive transfusions.

Methods:

It was a cross sectional study carried out at NIBD and BMT, PECHS campus. Pack red cells transfusion in case of < 7g/dl hemoglobin (Hb) with cardiac history and < 7g/dl Hb with symptomatic anemia was considered genuine. Platelets transfusion in case of sepsis and count < 50x109 /L, sepsis with bleeding and < 100x109 /L, patients on active chemotherapy without bleeding but platelet count < 10 x 109 /L and in patients presented with bleeding was considered genuine. Patients who were presented with bleeding, deranged coagulation profile and with sepsis + bleeding considered genuine for fresh frozen plasma transfusion.

Results:

A total of 250 transfusions and out of total, 134(54%), 100(40%) and 16(6%) PRCs, Platelets and FFP were transfused respectively. 80/134 (60%) PRCs and 22/90 (24%) platelets were non genuinely transfused, FFP and platelet apheresis were genuinely transfused. In non-genuine group, all patients received more than 1-unit platelet and the increment of platelet count post transfusion was found statistically non-significant. The mean Hb level of patients received 1 unit and more than 1-unit PRCs was statistically same and it was found out that there was same increment in Hb in both the groups post transfusion.

Conclusion:

The approach towards the appropriate use of blood products will not only minimize the risk of transmission of infectious diseases but also will reduce the economic burden.

OP: 07

Decreased Classical Monocytes and CD163 Expression in TB Patients: An Indicator of Drug Resistance

Dr. Faheem Shahzad Khan

Co-Authors

Noman Bashir, Atia Ali, Shagufta Jabeen, Mohammad Kashif, Khursheed Javaid, Romeeza Tahir, Afia Abbas, Shah Jahan, Nadeem Afzal

Abstract:

Tuberculosis (TB) is a disease instigated by Mycobacterium tuberculosis. Peripheral blood monocytes represent highly efficient effector cells of innate immunity against TB. Little is known about monocyte subsets and their potential involvement in the development of M. tuberculosis drug resistance in patients with TB. This study was conducted to investigate alterations in monocyte subsets, CD163 expression on monocytes, and its serum level in patients without and with rifampicin resistance TB (RR- TB) and healthy controls. A total of 164 patients with TB (84 without RR-TB and 80 patients with RR-TB) and 85 healthy controls were enrolled in this study. The percentages of various monocyte subsets and surface expression of CD163 on monocytes were quantitatively determined using flow cytometry. The serum level of CD163 was determined by commercially available ELISA kits. Decreased frequency of classical monocytes was detected in patients with RR-TB. Non-classical monocytes were decreased in patients without RR-TB; however, intermediate monocytes were raised in patients with RR-TB. The serum level of CD163 was decreased in patients of RR-TB that showed a positive correlation with the frequency of CD14++CD16-CD163+ and CD14++CD16+CD163+ monocytes. It is concluded that decreased classical monocytes and sCD163 in patients with RR-TB could be an indicator of drug resistance.

Poster Presentation

PP: 01

Predicting Outcome in Covid-19 Using Hematological and Inflammatory Markers (Experience with COVID-19-Kp Perspective)

Hamzullah Khan

Co-Authors

Shahtaj Khan, Khalid Khan

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Objectives:

To determine the predictive values of hematological & inflammatory markers with severity and mortality in COVID- 19

Methods:

A Reterospective study covering 182 patients, 112(61.53%) males and 70(38.46%)females, was conducted in two tertiary care hospital of Khyber Pukhtoonkhwa (Qazi Hussain Ahmed Medical Complex Nowshera & Hayatabad Medical Complex Peshawar from August 2020 to august 2021). Out of 182 patients, 112(61.53%) males and 70(38.46%)females. The independent t test was used in groups with different outcome (discharged satisfactorily vs expired) regarding hemoglobin concentration, neutrophil to lymphocyte ratio (NLR), absolute neutrophilic count (ANC) and platelet count. Receiver operating characteristics (ROC) curve was used as statistical tool to determine the relationship of clinical sensitivity and specificity of different hematological and inflammatolry markers to predict the worst outcome in COVID-19.

Results:

A statistically significant difference ($p<0.05$) exists between the groups (discharged satisfactorily vs Expired) regarding neutrophil to lymphocyte ratio (NLR), Absolute Neutrophilic count (ANC) and platelet count. NLR is a prognostic indicator in COVID-19 to predict mortality/worst outcome with a Area Under Curve (AUC) of 0.68 on ROC. Furthermore the AUC for d-dimers was (0.725, 95% CI 0.599-0.855) followed by CRP (0.565 95%CI 0.422- 0.7.8) and ferritin (0.519 95%CI 0.36-0.679). The median values of d-dimers was significantly higher in the deceased as compared to the survivors ($p<0.05$- Mann Whitney U test).The CRP and ferritn levels were not significantly different in study groups. There was a significant positive uphill correlation of the hospital stay with higher values of d-dimers ($p=0.01$, $r¬s= 0.287$).

Conclusion:

The clinical sensitivity and specificity of NLR, ANC and Platelet count have at least one tie between the positive actual disease state with mortality and the disease actual state group without complications. Regarding inflammatory markers, D-dimer is the main prognostic factor that predicts mortality in COVID-19 followed by CRP and serum ferritin levels. Male gender and patient with age>60 are at risk of worst outcome under the impact of deranged values of inflammatory mediators. Hospital stay itself has no significant relation with outcome.

PP: 02

Laboratory Errors Encountered in the Total Testing Process of A Tertiary Care Hospital Laboratory

Saba Aman

Co-Authors

Ghulam Fatima

Objectives:

Errors encountered during the analysis of patient samples not only hinder the routine activities of a lab, they also create a huge burden of cost with wastage of resources from sample collection tube to reagents, QC material, calibrators and most importantly human resource.

This study aims to identify the common errors encountered in a tertiary care hospital laboratory of a third world country, their frequency and which area of our total testing process we need to work upon more for betterment of our patient services.

Methods:

In this study we will describe the frequency of pre-analytical, analytical and post-analytical errors observed in our clinical chemistry, hematology, immunoassay and coagulation laboratories in CHK- Central laboratory DRKMP civil hospital Karachi during a 1-year period. Our clinical laboratory serves a 1900-beded tertiary care hospital. Data was collected for all clinical chemistry, immunoassay, hematology and coagulation samples during routine hours.

Results:

From November 2021 to November 2022, a total of 413631 routine venous blood specimens were received in the departments of Clinical chemistry, immunoassay, hematology and coagulation.Errors were detected in 281467 samples, with a total error rate of 68%. Pre-analytical,

analytical, post-analytical phases contributed to 97.25%, 0.25% and 2.5% of errors, respectively. We found the highest prevalence of errors in the pre-analytical phase. Hemolysis was the most common error encountered due to incorrect procedures for sample collection.

Conclusion:

The results of our study and the already gathered data suggest that more efforts are to be made for training of phlebotomy, sample collection and transport of specimens. Better recording of errors and streamlining the process of non-conformance monitoring.

PP: 03

Diagnostic Validity of ELISA Technique for the Detection of Glanzmann's Thrombasthenia Using Flowcytometry as a Gold Standard Test

Rana Muhammad Yousaf

Co-Authors

Dr. Saira Gul, Dr. Nazish Mazari, Mr. Ghulam Mustafa, Dr. Faheem Shehzad Khan, Dr. Muhammad Asif Naveed, Dr. Shahida Mohsin

Objectives:

The current study has been designed to determine the sensitivity and specificity of an Enzyme linked Immunosorbant assay for the detection of Glanzmann's Thrombasthenia patients using Flow cytometry as a gold standard test.

Study Design: This study was carried out at the University of Health Sciences Lahore. It was diagnostic validation study which included 44 GT patients and 44 healthy controls. To check the expression of αIIb or β3, the flowcytometric platelet markers CD41 and CD61 were used to validate the diagnosis. On each case that was verified, the GT Elisa was performed.

Results:

We revealed that the GT Elisa diagnostic accuracy was 92.05%. GT Elisa test sensitivity and specificity were, 90.91% and 93.18% respectively. The GT Elisa positive predictive value (PPV) was measured to be 93.02%. The observed negative predictive value (NPV) of GT Elisa was 91.11%.

Conclusion:

As conclusion, we can use this test in routine diagnostic setups because we identified that the new established ELISA technique accuracy was 92.05% with the sensitivity (90.91%) and specificity

(93.18%).

PP: 04

The Enigma of KMT2A Gene in Hematological Disorders

Syeda Ambareen Zehra

Co-Authors

Neelum Mansoor (MBBS, FCPS), Omer Javed (MBBS, FCPS), Sidra Maqsood (MSc Genetics), Saba Jamal (MBBS)

Objectives:

To assess the presence of MLL gene rearrangement and determining partner chromosomes involved in rearrangement.

Methods:

A retrospective study conducted in Cytogenetic laboratory of The Indus hospital, Karachi. All karyotype cases (age 1-60 year) with chromosome 11 aberrations were included from October 2020 to December 2022. Karyotype and FISH performed using G-banding and break a part probe for MLL respectively.

Results:

Total of 923 cases received for karyotyping out of which 32(3.4%) cases were reported for 11q23 abnormalities. The median age was 5 (1.25-12.5) years, majority 15 (47%) were 1-10 years, 9(28%) were >10 years and 7(22%) were <1 years. M:F ratio was 1.9:1. B-ALL were 19(59.4%), AML 8(25%), and 5 (15.6%) were others. FISH performed in 23(72%) cases, 21 (91%) showed concordance with karyotype. The t(9;11) was the commonest 7(22%), followed by t(4;11) and (1;11). Chromosome 9 was the most common partner identified in B-ALL. Loss of 11q23 observed in 3 (13%) cases.

Conclusion:

KMT2A gene rearrangement involved heterogeneous partner chromosomes involved in translocation. FISH and karyotype showed 91% concordance to detect this aberration.

PP: 05

Non-Anemic Hypoferritinemia: A Silent Hematological Disorder

Zeeshan Ahmad

Kashifa Nawab

Co-Authors

Dr M Asif Naveed, Dr Hajrah Syndeed Pal

Objectives:

Low ferritin is considered as latent IDA but patients have low ferritin with normal HB and normocytic normochromic picture considered as hypoferritinemia without anemia.

Methods:

A study conducted at Aga Khan university hospital Lahore on 318 patients with 194 females and 124 males for 6 months (June-November 2022). CBC performed on Sysmex XN-550 and ferritin performed on ADVIA Centaur XP.

Results:

Hypoferritinemia without anemia is found in 124 patients out of 318 with 38% in a ratio 1:3 males to females.

Conclusion:

In the situation of Non-Anemic hypoferritineia physicians and patients must be more aware for better diagnosis, management and follow up.

PP: 06

Hepatitis E Viremia among Blood Donors at a Regional Blood Centre in Pakistan

Dr Akhlaq Wazeer

Co-Authors

Usman Waheed (PhD), Zahida Qasim (M Phil), Raja Tahir Mahmood (PhD)

Objectives:

Hepatitis E is one of the most prevalent diseases in the developing world and is regarded as an emerging illness of global significance. The transmission of the hepatitis E virus (HEV) has lately been linked to blood transfusions. According to recent studies, HEV seroprevalence rates for blood donors in England, India, France, Pakistan, and Denmark were 13.5%, 17.70%, 16.6%, 13.3%, 2.04%, and 20.6%, respectively. The current study was undertaken to assess the prevalence and molecular evaluation of hepatitis E virus infection in the blood donors of Mirpur, AJK, Pakistan.

Methods:

The study was jointly conducted at the Mirpur Regional Blood Centre and the Department of Biotechnology, Mirpur University of Science and Technology, Mirpur, AJK, Pakistan. During the study duration (Jan 2021 – Jun 2022), a total of 12,450 apparently healthy blood donors were screened for anti-HEV IgG and IgM antibodies by enzyme- linked immunosorbent assay. Anti-HEV IgM antibody positives were further subjected to alanine aminotransferase (ALT) measurement by chemiluminescence immunoassay, HEV RNA quantification by Real-Time PCR, and phylogenetic analysis.

Results:

HEV IgG seroprevalence rate was 2.38% (n=297), while the IgM prevalence rate was 1.51% (n=188). The presence of anti-HEV IgG was not related to gender or ALT values. However, an age-dependent increase in IgG seropositive rate was observed. The molecular analysis showed that 41 of the 188 anti-HEV IgM reactive samples showed positivity for HEV RNA. The viral load of these 41 samples ranged from 2.9 x 104 to 4.1 x 105 copies/mL and belonged to HEV genotype 1.

Conclusion:

Blood transfusion safety may be at risk as evidenced by the HEV seroprevalence among asymptomatic blood donors, some of them having recent infections. Further study is required to determine any future strategy for HEV screening in blood centres.

PP: 07

Erythrocyte Alloimmunization and Autoimmunization among Multi Transfused Patients

Javeria Sikander

Co-Authors

Dr. Nazish Mazari (MBBS, FCPS), Mr. Ghulam Mustafa (M. Phil), Khansa Qamar (M. Phil), Dr. Muhammad Asif Naveed (MBBS, FCPS, PhD)

Objectives:

To determine the type and proportion of RBC alloantibodies and autoantibodies in repeatedly transfused CRF patients.

Methods:

This descriptive case-series study comprised a total of 170 patients with multi-transfused chronic renal failure. The participants in our study were both dialysis and non-dialysis CRF patients who had been diagnosed and had received at least three transfusions in the past, with the most recent transfusion occurring two weeks prior to sample collection. The samples were taken at the Sheikh Zayed Hospital in Lahore. After determining the ABO and Rh blood groups and performing a direct Coombs test, antibody screening was carried out using DiaCell I+ II+ III, and antibody identification was done using BIO-DiaPanel RAD's 1- 11.

Results:

Of the 170 CRF patients, 83 (48.8%) were men and 87 (51.2%) were women. In our study, 1.8% of the 170 CRF patients had alloimmunization, but no autoantibody was found. There have been identified IgG class antibodies against the minor blood group antigens C, Duffy (Fya), and c. Alloantibody testing revealed that two of the three individuals who were positive belonged to the Rh-negative blood group systems (A- and O-), whereas the third individual belonged to the Rh-positive blood group system (A+).

Conclusion:

In this investigation, all patients with alloantibody positive RBCs were female, suggesting that women may be at higher risk for RBC alloimmunization than men. For those who are more at risk for alloimmunization and need long-term transfusions, antibody screening tests should be a

regular part of pretransfusion testing.

PP: 08

Compliance of Documentation by Health-Care Professionals: Evaluation of Transfusion Practices at Bedside

Naveena Fatima

Co-Authors

Nida Anwar (FCPS), Haya-ul-Mujtaba (MSC), Tahir Shamsi (FRCPath)

Objectives:

In transfusion practices, noncompliance with standard guidelines may lead to cause adverse events. Bedside assessment during and post-transfusion is equally important as overall transfusion-related precautions. The current study was conducted to observe the practices of health-care professionals related to transfusion documentation through a structured questionnaire.

Methods:

A cross-sectional study was conducted after receiving ethical approval. A questionnaire structured for the documentation of transfusion process at bedside was filled having information of the name of the product receiver, date, time, name of patient with a medical identification number, ABO group match with the product, name of two health-care staff who started transfusion, and start and stop timings of transfusion. Initials of staff and patient vital record at onset, 15 min, and the end of transfusion were also recorded. Analysis was performed by using SPSS 23.0

Results:

A total of 500 transfusion episodes were analyzed, out of which 115 (23%) forms were available in the patient files and 88 (76%) forms were filled. The overall compliance rate was 18%. The highest compliance was observed in the documentation of the name of nursing staff at the start of transfusion 79 (90%) and noncompliance was observed in the documentation of duty doctor initials at the completion 85 (96%).

Conclusion:

We observed scarce practice regarding transfusion-related documentation by health-care staff at the bedside. Stringent steps should be taken to avoid morbidities and mortalities. Training and education in this context is the need of time.

PP: 09

Clinical Assessment and Prevalence of Menorrhagia in Women with Inherited Bleeding Disorder

Sidra Zafar

Co-Authors

Madiha Abid, Munira Borhany

Objectives:

The following study aims to evaluate the frequency of women in reproductive age group with complaints of heavy menstrual bleeding in the absence of pelvic pathology.

Methods:

Following study was conducted in the National Institute of Blood Diseases and Bone marrow Transplantation from February to July 2022 after taking patients informed consent. Patient's medical history, clinical data and out outcome was collected and analyzed using SPSS version 23.

Results:

A Total of 272 patients of inherited bleeding disorder were screened for their bleeding history. Among them males were 103 and females were 169. Overall, patients of inherited bleeding disorder includes 89(32.7%) Von Willebrand disease, 21(7.72%) Bernard-Soulier syndrome, 91(33.45%) Glanzmann's thrombasthenia, 15(5.5%) FVII, 5(1.83%) FV, 15(5.51%) FI and 32(11.76%) FXIII. Most common clinical manifestations were observed includes; menorrhagia (47%), gums bleeding (34.4%), bruising (31.3%) and epistaxis (30.3%). However patient's demographic characteristics include mean age 20.4 years with positive family history, 60% and consanguinity in 75%. However, the frequency of menorrhagia among women with inherited bleeding disorder was higher in VWD i.e. 17.7%, followed by FXIII in 8.87% and 4.7% in FI deficiency. All the patients were managed with VWF/FVIII concentrates, fresh frozen plasma, Desmopressin and anti-fibrinolytics (such as tranexamic acid).

Conclusion:

Menorrhagia is a common symptom in women with inherited bleeding disorders. It can present acutely, and it adversely affects quality of life therefore proper care should be done in consultation with a hematologist.

PP: 10

A Challenging Diagnosis of Rare Co-Existent Multiple Myeloma and Prostate Adencocarcinoma

Shafi Rehman

Co-Authors

Rashid Iqbal, PhD

Objectives:

To examine biochemical parameters, clinical characteristics, demographics, radiological and histopathological findings, treatment modalities and outcomes when multiple myeloma and prostate adencocarcinoma co-exist simultaneously.

Methods:

A literature search was conducted using PubMed, Google Scholar, Science Direct, and the Directory of Open Access Journal. We applied appropriate Mesh terms and keywords and selected the case reports based on our inclusion and exclusion criteria. We found five case reports that were further evaluated for demographic, diagnostic, and treatment parameters.

Results:

Based on the results of the case reports the prevalence of multiple myeloma and prostate cancer simultaneously is commonly found at an average age of 63 years. The most common symptom reported at presentation was Low back pain (60%), Osteolytic lesions were seen (80%) in patients on imaging with elevated prostate surface antigen levels. Anemia was found in (60%) of patients and (40%) of patients had thrombocytopenia.

Conclusion:

Our study provides an important overview of the available literature when Multiple Myeloma and Prostate Adenocarcinoma co-exist together. Our knowledge of the exact relationship between Multiple Myeloma and Prostate Adenocarcinoma is limited given less sample size and needs to be supplemented by a large sample size; therefore, rare cases like these need to be reported.

PP: 11

Association of Clinical Features and Haematological Parameters with Serotype-Specific Dengue Virus Infection

Raima Kalhoro

Objectives:

To identify the relationship of common serotypes of dengue virus in our region with hematological changes in dengue patients

Methods:

This observational study was conducted at Isra University Hospital, Hyderabad and included 100 cases of dengue fever. Dengue virus antibodies were confirmed by using dengue virus rapid test. Serotypes of virus were confirmed by immunofluorescence test. Hematocrit (HCT), total leukocyte count (TLC) and platelet count were determined.

Results:

The association of majority of common clinical presentation with dengue serotypes was found as non-significant except bleeding, which was found significant. The association of TLC was found significantly associated with severity of serotype. There were only two cases of serotype III and both cases were found with decreased TLC. Thrombocytopenia was significantly associated with serotype. However no significant difference was found between hematocrit values and serotype of dengue virus.

Conclusion:

Bleeding was only clinical presentation associated significantly with dengue serotypes. The low platelets count and TLC were also significantly associated with severity of dengue serotype. Patients with serotype III had severe thrombocytopenia.

PP: 12

Assessment of Platelet Consumption in Malignant Blood Disorders; Can We Develop A Rationale Way to Save Platelet?

Anum Khalid

Co-Authors

Naveena Fatima (MSPH), Aisha Jamal (FCPS), Qurat-ul-Ain Rizvi (FCPS), Laraib Majeed (BSC), Nida Anwar (FCPS)

Objectives:

The study was conducted to evaluate usage of platelets in terms of issuance, wastage and transfusions.

Methods:

A 6-month platelet audit was carried out at NIBD PECHS campus. Platelet issuance and wastage rate was retrieved from internal software 'zaviya'. Two hundred and fifty platelet transfusions were evaluated to assess the restrictive and liberal transfusion. Platelets transfusion in case of sepsis and count <20x109/L, sepsis with bleeding and<50x109/L, patients on active chemotherapy without bleeding but count <10 x 109/L and in patients presenting with bleeding was considered genuine.

Results:

During the study period, 960 platelets were issued, out of which 10 (1%) were apheresis platelet. There was no wastage seen in consumption. Out of 250 transfusions, 3(1.2%) were apheresis platelet that were genuinely transfused. Out of 247, 60(24%) platelets were non genuinely transfused as per the criteria described in methods. However, in non genuine group, all patients received more than 1 unit platelet and the increment of platelet count post transfusion was found statistically non significant (P= 0.121).

Conclusion:

Regular assessment of blood and blood products is necessary in order to enhance the supply of products when it is obligatory needed in order to decrease the economic burden on patients and also limit the liberal and non genuine transfusions.

PP: 13

To Evaluate the Role of Hematological Scoring System in Early Diagnosis of Neonatal Sepsis by Using Blood Culture as A Gold Standard in Tertiary Care Hospital

Dr. Farhan Ahmed

Objective:

To detect neonatal sepsis by using hematological scoring system. To confirm the neonatal sepsis by using blood culture.

Methods:

This study consists of 106 neonates admitted at Neonetal intensive care unit at Liaquat university of Medical and health sciences Hospital Hyderabad, who were clinically suspected of sepsis. The neonatal hematological parameters included were total leukocyte count, total neutrophil count, lymphocytes, immature cells, immature to total leukocyte ratio, immature to mature cells ratio, platelet count, and degenerative cells (toxic granules & dhole bodies). These parameters were evaluated based on the standard reference values given by Rodwell et al and were graded as a) score >5- sepsis, score of 3 to 4 – probable sepsis and c) score of <3 as no sepsis. Blood culture was the standard indicator for proven sepsis.

Results:

Out of 106 patient (46 males & 60 Females), 53 (50%) were HSS positive and 46 (43.4%) were culture positive. The mean age was 11.53 ± 5.7 days in the patients presented with suspected NS. The Odd ratio of diagnosis with NS was 0.7% and P value < 0.005.

Conclusion:

No solitary hematological constraint is greater as compared to another in diagnosing newborn sepsis, a blend of these constraints in the method of hematological scoring system. They are simple tests which can be performed within a short time and can help taking critical decision regarding initiation of antibiotic therapy.

PP: 14

Chemotherapy Induced Thrombocytopenia and Its Association With Coagulopathy; A Single Centre Experience

Aisha Arshad

Co-Authors

Naveena Fatima (MSPH), Laraib Majeeb (BSC), Anum Khaklid (Mphil), Nida Anwar (FCPS)

Objectives:

The study was done to observe the association of chemotherapy induced thrombocytopenia with coagulopathy in patients with hematological malignancies.

Methods:

This was a retrospective cohort study done at NIBD PECHS campus from 2020-2021. All the patients diagnosed with hematological malignancies receiving chemotherapy during the study period were included. Patients who had thrombocytopenia before chemotherapy were excluded. PT, APTT and platelet count, post chemotherapy was assessed. Chi square test and Fisher exact test was applied to observe the association. P-value <0.05 was considered to be statistically significant.

Results:

A total of 34 chemotherapy cycles for hematological malignancies were analyzed. Median and range of age of patients was 36(9-75years) with predominant representation of male patients. Median platelet count post chemo was 39x109/L (4-398). The overall incidence of chemotherapy induced thrombocytopenia was 18%. Overall PT and APTT were deranged in 21(61.8%) and 24(70.6%) cases respectively. The association between chemotherapy induced thrombocytopenia and PT and APTT was observed however it was found out that deranged PT and APTT results were not associated with thrombocytopenia and found to be statistically non-significant (P- value >0.05).

Conclusion:

In conclusion, the association of chemotherapy induced thrombocytopenia with coagulopathy was not found statistically significant. However, the findings might suggest the identification of high-risk cohort at risk of bleeding and/or thrombosis. Longitudinal studies with larger sample size are needed in this regard.

Consultative Hematology

Haemophagocytic Lymphohistiocytosis Associated with Infection

Prof. Dr Waseem Iqbal

Hemophagocytosis (HP) has been reported in the literature under various diagnostic terms like histiocytic medullary reticulosis, malignant histiocytosis or infection associated hemophagocytosis and is described to result from immunologic activation of the mononuclear phagocytic system (reactive), neoplastic proliferation of histiocytes (malignant) and a genetic or chromosomal derangement Infection associated hemophagocytosis may result from immunologic activation of mononuclear phagocyte system. The phenomenon of HP may affect various organ functions and hematological parameters. Exaggerated HP can lead to hemophagocytic syndrome(HPS) which is a fatal condition. Recognizing and treating this disorder (anticytokine therapy) and underlying infection may save the life of the patient. The aim of the present study was to determine the etiology and grading of hemophagocytosis (HP) associated with infection and its effect on haematological parameters, and, to correlate it with the clinicopathological effects of hemophagocytic syndrome (HPS).

A total of sixty-two patients suffering from infection of varied etiology were included in this study. Bone marrow aspiration was done in all the cases along with complete blood counts. Bone marrow smears were examined for HP and its intensity and effect on hematological parameters was recorded. Among the sixty-two patients included in this study, 27% (17/62) had viral infection followed by enteric fever (21%; 13/62), tuberculosis and visceral leishmaniasis (14% each; 9/62 each), malaria (13%; 8/62), brucellosis and others (5% each; 3/62). Most patients showed either moderate (grade II, 50%; 31/62) or severe degree (grade III, 34%; 21/62) of HP. Hemophagocytic syndrome was present in 34% patients. Patients with increased intensity of HP in the bone marrow had profound effect on hematological parameters; particularly hemoglobin and platelet count,

resulting in the depression of these formed elements. Viral, bacterial and parasitic infections play an important role in the causation of histiocytic hyperplasia with HP. It may present as HPS with multisystem disorder which could be fatal if improperly diagnosed and left untreated. Severe intensity of HP has a profound effect on hematology parameters of patients particularly on hemoglobin level, total leukocyte count) and platelet count with a drastic decrease in all of the parameters during the severe disease course.

Application of Cytogenetics in Hematological Disorders

Dr Zeshan Ansar

This talk will provide an overview of our current understanding of common haematological malignancies and some diagnostic milestones that have been accomplished as a result of extensive research into the molecular biology of these cancers. I will provide details of new developments in the availability of NGS panels. There will also be an emphasis on the critical role of interpretation of molecular assays, here I will cover guidelines/recommendations that are available to assist with this process and some of the challenges we face when selecting the correct tests.

Hematological Challenges in Solid Organ Transplant Patients

Prof. Dr Mona Aziz

Several hematological challenges are encountered after a solid organ transplant that need to be dealt timely and intelligently. This spectrum includes Cytopenias ,TMA ,Infections and HPS ,Post kidney-transplant erythrocytosis, GVHD (graft versus-host disease) ,post-transplant lymphoproliferative disorder, VTE and Coagulopathy . The evaluation of these disorders must

consider issues unique to the post-transplant setting. Attention to the time of onset of cytopenia(s) is important because the disorders of passenger lymphocyte syndrome, transplant-related thrombotic microangiopathy, hemophagocytic syndrome, and GVHD typically occur during the first few months after SOT, and post-transplant lymphoproliferative disorder usually occurs within the first year. Drug-related anemia and cytopenia due to a variety of mechanisms, including perturbation of T-cell subsets by the immunosuppressive regimen leading to autoimmune cytopenia, should be considered.Viral infections can cause direct suppression of hematopoiesis, and a variety of opportunistic infections can precipitate acquired hemophagocytic syndrome.

Early diagnostic bone marrow biopsy is warranted, because pancytopenia is often the presenting symptom of one or multiple life-threatening pathologies that may have a better prognosis if treated early.

Complications of Hemophilia; Multidisciplinary Approach

Prof. Dr Lubna Zafar

COVID 19 Coagulopaties

Prof Dr Javed Akram

PSH
Pakistan Society of Haematology