24th Pakistan Society of Haematology Annual Conference

PAKISTAN SOCIETY OF HAEMATOLOGY

FEBRUARY 05-06, 2022

Message
Chair, Scientific Committee

Dear Colleagues

I welcome all the participants to 24th Annual PSH Conference held at Karachi, Pakistan. I anticipate that conference will provide a tremendous chance to share the scientific and educational knowledge among young and leading hematologists. I am grateful to national and international speakers for gracing the occasion especially in the recent changed circumstances of the country. I wish they stay safe with us virtually.

Scientific committee worked tirelessly to plan the program. Six pre-conference workshops are arranged by leading hematologists to nurture budding hematologists and technologists. The distinct feature of conference is display of original work by hematologists and their residents. I am pleased to inform that we received more than 80 abstracts from technologists and residents so far. Committee members reviewed the blinded abstracts and selected the best abstracts for oral presentation in various sessions.

I am hopeful that the hematology community at large will benefit from the knowledge of our research and that we will have an excellent turnout of participants.

By
Professor Bushra Moiz

Virtual Pre-Conference Workshops

January 31-February 04, 2022

S. No	Workshop titles	Team Leads	Time
1	Thrombosis & Hemostasis: from bench to bedside	Dr. Anila Rashid	9:00-1:00 am
2	Quality Assurance in Haematology Laboratory to Improve Patient Safety	Dr. Muhammad Shariq	9:00-1:00 am
3	Molecular Hematology: Diagnostics and Beyond	Dr. Mahesh Kumar	9:00-1:00 am
4	Virtual Workshop on Morphology	Dr Jawad Hasan	2:00-5:00 pm
5	Relax, and Go with the Flow: Demystifying Multi-Parameter Flow Cytometry	Dr. Fatima Mehraj	9:00-1:00 am
6	Challenges in Immunohematology	Dr Muhammad Hasan	9:00-1:00 am

Day 1: Saturday, February 05, 2022

Time	Session
08:00 am - 08:45 am	Young investigator award
08:45 am - 09:00 am	Welcome and Inauguration
09:00 am - 10:00 am	Ibn-e Sina Lecture
10:00 am - 02:00 pm	Red Cell Disorders
12:00 am - 01:00 pm	General Body Meeting
01:00 am - 02:00 pm	Break
02:00 am - 04:00 pm	Platelet and Coagulation Disorders
04:00 am - 06:00 pm	Challenges in Transfusion Medicine

Session-I: Tackling Red Cell Disorders-Current and Future Strategies

Moderator	Dr. Shaheen Kouser
Chair	Dr. Ghulam Nabi Kakepoto
Co-Chair	Prof. Dr. Samina Naeem

Time	Topic	Speaker
10:00 am – 10:20 am	Emerging Therapies in Sickle Cell Disease	Dr. David Rees
10:20 am – 10:40 am	Thalassemia management- Beyond Iron Chelation	Dr. Michael Angastiniotis
10:40 am – 11:00 am	Diagnostic Approach to Hemoglobinopathies in Pakistan-How far have we come?	Dr. Suhaib Ahmed
11:00 am – 11:20 am	Anemias of Infancy-A Local Perspective	Dr. Nisar Ahmed
11:20 am – 11:40 am	Panel discussion	Dr. Samina Amanat Dr. Shahtaj Masood Dr. Saqib Ansari

Session-II: Platelet and coagulation disorders

Moderator	Dr. Munira Borhany
Chair	Prof. Dr. Tahira Zafar
Co-Chair	Dr. Abdul Mannan Dr. Ayesha Imran

Time	Topic	Speaker
02:00 pm – 02:20 pm	Gene Therapy in Haemophilia	Dr. Edward Tuddenham
02:20 pm – 02:40 pm	Covid-19 associated coagulopathy	Dr. Saskia Middelorp
02:40 pm – 03:00 pm	Women and bleeding disorder: Diagnostic challenges	Dr. Maha othman
03:00 pm – 03:20 pm	Paediatric/ Neonatal Thrombosis	Dr. Zehra Fadoo
03:20 pm – 03:40 pm	Panel discussion	Dr. Tahira Zafar Dr. Abdul Mannan Dr. Anila Rashid Dr. Nida Answer Dr. Ayesha Imran

Session-III: Challenges of Transfusion Medicine - the way forward

Moderator	Dr. Shabneez Hussain
Chair	Dr. Saleem Ahmed Khan (Retd)
Co-Chair	Dr. Farhat Bhatti

Time	Topic	Speaker
04:00 pm – 04:20 pm	Mini-Pool Plasma Fractionation as an Option for Optimizing Utilization of Domestic Plasma	Dr. Magdy El ekiaby
04:20 pm – 04:40 pm	Implementation of Blood Safety in Public Sector Hospitals- Between Reality and Ideals	Dr. Saba Jamal
04:40 pm – 05:00 pm	AABB accreditation of blood centers in Pakistan – A dream or reality	Dr. Hina Qureshi
05:00 pm –05:20 pm	Haemovigilance in the Setting of Fragmented Blood Transfusion System	Dr. Nuzhat Mushahid
05:20 pm – 05:40 pm	Panel discussion	Dr. Nuzhat Mushahid Dr. Hassan Abbas Zaheer Dr. Maria Ali Soomro Dr. Uzma Chohan

Day 2: Sunday, February 06, 2022

Time	Session
08:00 am - 08:30 am	Young investigator award
08:30 am - 09:30 am	Plenary session
09:30 am - 11:30 am	Acute Leukaemia and Myeloproliferative disorders
11:30 am - 01:30 pm	Bone Marrow Failure Syndromes
01:30 pm - 02:00 pm	Break
02:00 pm - 04:00 pm	Lymphoproliferative disorders and plasma cell dyscrasia
04:00 pm - 06:00 pm	Bone Marrow Transplant
06:00 pm - 06:15 pm	Vote of Thanks by Chair Scientific Committee

Session-I: Acute Leukaemia and Myeloproliferative disorders

Moderator	Dr. Nida Anwar
Chair	Dr. Ayaz Mir
Co-Chair	Dr. Usman Shaikh Dr. Muhammad Irfan

Time	Topic	Speaker
09:30 am – 09:50 am	Therapeutic options for treating MF	Dr. Srdan Verstovsek
09:50 am – 10:10 am	Risk-based management of Polycythemia	Dr. Clair Harrison Guy's
10:10 am – 10:30 am	Risk-based management of AML	Dr. Talha Badar
10:30 am – 10:50 am	Management of B Cell ALL in Pakistan- Gaps & Challenges	Dr. Bushra Ahsan
10:50 am – 11:10 am	Panel discussion	Dr. Raheel Iftikhar Dr. Aisha Jamal Dr. Shahzad Dr. Uzma Zaidi

Session-II: Bone marrow failure syndromes

Moderator	Dr. Sana Khurram
Chair	Dr. Asad Abbasi
Co-Chair	Dr. Muhammad Nadeem TI(M) Dr. Kashif Shaikh

Time	Topic	Speaker
11:30 am – 11:50 am	An update on inherited Bone Marrow Failure Syndromes	Dr. Ghulam Nabi Kakepoto
11:50 am – 12:10 pm	Management of aplastic anemia in resource constrained environment	Dr. Parvez Ahmed
12:10 pm – 12:30 pm	Acquired BM failure states: An update on primary MDS	Dr. Syed Muhammad Irfan
12:30 pm – 12:50 pm	Panel discussion	Dr. Waseem Iqbal Dr. Khalid Zafar Hashmi Dr. Khalid Hassan Dr. Nadir Ali Dr. Farrukh Ali Khan

Session-III: Lymphoproliferative and plasma cell dyscrasia

Moderator	Dr. Usman Shaikh
Chair	Dr. Mehreen Ali

Time	Topic	Speaker
02:00 pm – 02:20 pm	Role of CAR T- Cell Therapy in Relapsed Refractory Multiple Myeloma	Dr. Muzaffar Qizalbash
02:20 pm – 02:40 pm	Management of Diffuse Large B Cell Lymphoma in Low Income Countries	Dr. Raheel Iftikhar
02:40 pm – 03:00 pm	New Advancement in the Management of Mantle cell Lymphoma	Dr. Munira Moosajee
03:00 pm – 03:20 pm	Panel discussion	Dr. Munira Moosajee Dr. Raheel Iftikhar

Session-IV: Tahir Shamsi Memorial Lectures

Moderator	Dr. Natasha Ali
Chair	Gen. Parvez
Co-Chair	Dr. Salman Adil

Time	Topic	Speaker
04:00 pm – 04:20 pm	Prevention of relapse after SCT in AML	Dr. Bipin Savani
04:20 pm – 04:40 pm	Maintenance therapies for Lymphomas after autologous transplants	Dr. Farrukh Awan
04:40 pm – 05:00 pm	Transplant outcomes in high-risk aplastic anemia	Dr. Qamar un Nissa Chaudhary
05:00 pm – 05:20 pm	Issues and potential solutions of SCT program in developing countries	Dr. Ayaz Mir
05:20 pm – 05:40 pm	Panel Discussion	Dr. Nasir Dr. Shahzad Sarwar Dr. Tariq Mahmood Satti

List of Committee Members

Members of Organizing Committee:

1. Dr. Salman Naseem Adil
2. Dr. Natasha Ali
3. Dr Bushra Moiz
4. Dr. Muhammad Shariq Shaikh
5. Mr. Imran Waheed
6. Ms. Gulshan Arif

Members of Scientific Committee:

1. Dr. Bushra Moiz – Chair
2. Dr. Salman Naseem Adil
3. Dr. Natasha Ali
4. Dr. Muhammad Shariq Shaikh
5. Dr. Usman shaikh
6. Dr. Anila Rashid
7. Dr. Muhammad Hasan
8. Dr. Syed Muhmmad Irfan
9. Dr. Waseem Iqbal
10. Dr. Muhammad Nadeem
11. Dr. Naila Raza
12. Dr. Munira Borhany
13. Dr. Shabneez Malik
14. Dr. Hina Qureshi
15. Dr. Fatima Meraj
16. Dr. Mahadev Harani
17. Dr. Danish Shakeel
18. Dr. Sana Khuram
19. Dr. Jawad Hassan
20. Dr. Javeria Qureshi
21. Dr. Uzma Zaidi
22. Dr. Mahesh Kumar

Abstracts – Invited Speakers

Plenary Lecture I:

Quality Councils to Promote Quality in the Laboratory

Dr. Catherine P.M. Hayward,
Susie Maia-Castellan, Jayne Clemens and Teresa Difrancesco
MC Master University and the Hamilton regional Laboratory Medicine Program

Quality management systems (QMS) are designed to manage continual improvement in all processes within organizations to better meet the needs of customer expectations. In the case of hematology laboratories, QMS are strengthened by putting in place an organizational structure that promotes continuous quality improvement, such as a laboratory program Quality Council with terms of reference that support the vision, mission, and values of the organization. Such Quality Councils benefit from multi-stakeholder engagement to collectively set goals and foster a culture of continuous quality improvement. Quality Councils are important for the planning and monitoring of performance and quality improvement initiatives, with the goal of maintaining and improving quality management within the organization. The Councils provide important ways to promote best practices and techniques, and they also enable sustainable success. They benefit from regular communications of the quality program's evaluation-driven achievements to the supporting healthcare organization. The presentation will include an overview of how Quality Councils, QMS, business management software, accreditation, risk management and the assessment and promotion of quality work together to promote quality in laboratory organizations. Together, these elements provide essential support of the mission, vision, and values of diagnostic laboratories. QMS help clarify roles and responsibilities, simply the processes for improvement and reduce rework, provide processes to assess key performance indicators, and enable process control and continuous quality improvement that guide improvements for staff and patient safety. The twelve essentials of QMS include: organization, personnel, equipment, purchasing and inventory, process control, documents and records, information management, occurrence management, assessment, process improvement, service, and satisfaction, and finally, facilities and safety. Many of these elements are supported by the QMS business management system used for documentation and the management of policies, processes, procedures, important QMS record keeping (e.g., forms and records on staff credentials, equipment, safety inspections, training, and competency records), and the management of non-conformances and corrective actions. Laboratory and hospital accreditation (through planned, independent, and documented assessments) complement internal audits; these audits help determine whether quality requirements are being met and what processes need improvement. Risk management is essential to identify and assess risks, and provide the framework, tools and resources for risk assessment, analysis, and decision making for risk control and reduction. The presentation will touch on the use of risk assessment tools such as FMEA (Failure Mode and Effects Analysis) and FRACAS (Failure Reporting and Corrective Active Systems), with some examples of how such tools have been used in laboratory practice. The presentation will also touch on a large hematology laboratory

project to improve coagulation testing through procurement and introduction of new instruments and methods. Illustrative examples will be given of how some risks related to pre-analytical and post-analytical errors were addressed to promote and sustain improved quality.

Tackling Red Cell Disorders-Current and Future Strategies

Anemias of infancy- A local perspective

Dr. Nisar Ahmed

Understanding Anemia of Infancy is very important in local and international perspectives for timely diagnosis and management of the infants. Outline of presentation is based on sowing clinical scenarios and live cases to ensure full participation and benefit of the participants. Physiologic anemia or anemia of early infancy remains the most common presentation due to immune hemolytic disease, Pure Red Cell Aplasia, or inherited RBC disorders. Age of presentation clinical symptoms, dietary history is important and diagnosis. Underlying medical conditions, effect of drugs or toxins and family history are also significant catch points. Proper physical examination with laboratory evaluation including basic screening and specific tests should be included in the approach to diagnose anemia of infants. Neonatal anemia also will be discussed as a separate significant entity with differentiation between DBA and TEC. The comparison of data of laboratory parameters of neonatal anemia at the children's Hospital, University of Child Health, Lahore with international registries will also be presented along with algorithm of management plan. Reference from literature will be included.

Platelet and coagulation disorders

Pediatric and Neonatal Thrombosis

Dr. Zehra Fadoo

Pediatric thrombosis is multifactorial, and usually risk factors either congenital or acquired are present. The incidence of childhood thrombosis is 0.07–0.14/10,000 in the general population. This incidence has been reported to be 5.3/10,000 in children with risk factors. Thromboembolism (TE) is still regarded as a rare event in childhood and therefore knowledge of diagnostics, therapy and prophylaxis is limited among general pediatricians. During the past years, however, it is increasingly recognized as having significant impact on mortality, chronic morbidity, and the normal development of children, which has led to an enhanced sensitivity toward considering such events in respective patients. A considerable number of acquired and hereditary thrombotic risk factors have been identified which may also have an impact on therapeutic decisions and prognosis concerning outcome and the risk of a second event. Thromboembolism in a child is a serious condition that needs early detection and management. Indications for therapeutic

interventions, such as thrombolysis and prophylactic anticoagulation with respect to the different clinical conditions and their combination with other risk factors, are not yet well defined. Newer guidelines with risk factors assessment and risk-based therapy and management are needed on individualized basis to ensure adequate treatment and limitation of side effects.

Women and bleeding disorders: Diagnostic challenges

Dr. Maha Othman

Bleeding disorders in women is a significant global health concern that results in poor quality of life. 1 in 9 women are diagnosed with a bleeding disorder and 15% of women with heavy menstrual periods have an underlying inherited bleeding disorder. The challenges are many including underdiagnosis, poor identification, sexism/universal stigmatization of menstrual periods, iron deficiency in women with heavy menstrual bleeding and lack of access to care. Pregnancy poses an additional diagnostic and management challenge, which requires special considerations and often interdisciplinary approach and individualized care. Laboratory testing, screening, correct disease classification and nomenclature remain areas for improvement. Education of health care providers is key. This presentation will provide an overview of the challenges in managing women with bleeding disorders with a focus on VWD in pregnancy and hemophilia carriers. The international efforts undertaken to address these challenges and to promote awareness among health care professionals on correctly identifying those conditions and improving outcomes, will be highlighted.

Challenges in Transfusion medicine – the way forward

Dr. Shabneez Hussain

The safety and quality of blood products as well as the safety of the blood supply in highly developed regions of the world are better most developing countries. It has been observed that there is a significant delay in the development of modern transfusion medicine in developing countries. Hemovigilance, a highly crucial initiative in today's era, has many challenges for its implementation in the developing region. Fragmentation of transfusion services remains a major issue in lower-middle income countries.

There are many strategies that are being adopted by developing nations. Once such example is the use of nucleic acid testing for screening of blood which has highly improved the safety of blood transfusion despite cost being a major limitation. Development of regional blood centers and implementation of blood safety regulations in Pakistan is another initiative that has led to improved transfusion services, especially for hospitals in the public sector.

Further developments include the training courses for nurses and technicians to teach or upgrade skills concerning inventory management, handling of blood components, storage, and

transportation. Awareness related to patient blood management and development of hospital transfusion committees remains a challenge. Accreditation of blood centers remains a major goal for blood banks operating in Pakistan. Mini-pool plasma fractionation, a successful strategy for optimal utilization of domestic plasma is worth considering in Pakistan where regional blood centers have been established and there are large quantities of plasma to be utilized.

Transfusion medicine, rapidly developing world-wide, is relatively underdeveloped in Pakistan. There are many efforts underway to recognize and improve transfusion services in Pakistan and and this session will highlight the way forward.

Mini-Pool Plasma Fractionation as an Option for Optimizing Utilization of Domestic Plasma

Dr. Magdy El Ekiaby

Background: Plasma Derived Medicinal Products (PDMP) is considered on the WHO List of Essential Medicines (LEM). The products include coagulation factors and immunoglobulins which are used to treat a variety of inherited and acquired coagulation and immunological disorders. Unfortunately, the access to such products is limited in medium and low-income countries (MLIC). In the meantime, developing countries have surplus of recovered Fresh Frozen Plasma (FFP) due to limited clinical indications. There is a new development to better utilize this surplus plasma.

New approach to improve surplus FFP to produce safe alternatives to PDMP: The solution depends on miniature of Plasma Fractionation industry to a scale that can be adapted to National Blood Transfusion Centers (NBTC) in LMICs.

The solution: Development of a series of CE marked sterile medical devices with the aim to pool plasma or cryoprecipitate in mini-pools (pool sized ranges from 4 – 7 Liters), to produce coagulation factors and IVIG. The products are regulated under blood bank regulations when using the CE marked Medical Devices. Final products can have a dose label of the following plasma proteins; FVIII, VWF, Fibrinogen, FXIII as well as IVIG.

Clinical Experience Mini Pool Plasma Products: Pharmacokinetic studies for Mini-Pool FVIII and IVIG showed similar half-life, clearance rate and safety like PD CFCs. It also showed similar product efficacy when compared to PDMPs.

Conclusion: Mini Pool Plasma Fractionation is developed in a form of CE Marked medical devices which can enable National Blood Transfusion Centers to produce safe alternatives for CFCs and IVIG at an affordable cost. It also improves the utilization of recovered plasma in these countries and reduces the discard of this valuable resource.

Acute Leukemia and Myeloproliferative disorders

Risk based management of Polycythemia Vera

Dr. Claire Harrison

In the first half of the twentieth century, entirely untreated Polycythemia Vera had a dismal prognosis, with a 50% survival of less than 2 years, deaths being due to thromboembolic events. However, adequately treated PV now has a relatively benign natural history with a life expectancy of over 11 years, bearing in mind that the average age of onset is 60 years. Factors predictive of poorer prognosis and increased complication rates in PV include *JAK2* mutation burden and white cell count at diagnosis, both factors probably serving as surrogate markers of disease activity.
Based on the biological factor's patients are classified as high or low risk for thromboembolic complications. The British Society of Haematology defines high risk as age $\geq$65years and /or prior PV-associated thrombotic history and this is the group who will primarily be considered for cytoreductive therapy. Treatment in PV is aimed reduction of the thrombotic and hemorrhagic risk. Minimization of the symptomatology and complications and minimization of the risk of transformation to myelofibrosis and acute leukemia are other aims to be considered.

Mainstay of treatment for low-risk PV is venesection with a target hematocrit of ≤0.45 has been confirmed in a randomized controlled trial, CYTO-PV. Low-dose aspirin (75–100 mg daily) reduces thrombotic complications in PV and should be used in all PV patients without contraindications to this drug. Its use is supported by a randomized study (ECLAP).

The first-line management option for high-risk PV is either hydroxycarbamide or a pegylated interferon, depending on patient and physician choice. The second line option is usually the drug not chosen as first line. Ruxolitinib is a second line option for those intolerant or resistant to hydroxycarbamide. Third line options are busulphan, ^{32}P, pipobroman or anagrelide in those where control of the platelet count is difficult.

Risk based management of AML

Dr. Talha Bader

Acute myeloid leukemia (AML) is a heterogenous disease with variable outcome depending upon cytogenetics and molecular risk factors. For decades management of AML has been monotonous with inferior responses and survival outcome. With increase understanding of AML disease biology, several novels, molecularly targeted therapies have been approved over the last 5-7 years, providing an opportunity to have a personalized, risk-adapted approach to AML treatment. This has translated into a better outcome, however, there is still a lot of room for improvement. In my presentation, I will be highlighting the progress in management of AML, how to devise an individualized therapy to improve disease outcome and future directions.

Management of B- Cell ALL in Pakistan – Gaps & Challenges

Dr. Bushra Ahsan

Acute lymphoblastic leukemia (ALL) is a multifaceted disease in its biological pathogenesis, with variety of populations affected and numerous epidemiological factors. The treatment regimens are typically intense and involve many chemotherapeutic agents that carry a multitude of toxicity risks. Prognosis depends on age-group, the leukemic subtype and therapy utilized. Efforts to improve the prognosis in different group of patients have been challenging. In addition to the challenges due to disease there are additional challenges like the availability of drugs, facility to diagnose and expertise to treat. In my talk I will be looking into the gaps and challenges that we face in Pakistan in management of acute lymphoblastic leukemia.

Dr. Tahir Shamsi Memorial Lecture: Stem cell Transplant

Prevention of relapse after SCT in AML

Dr. Bipin Savani

Disease relapse is a major barrier to successful allogeneic hematopoietic cell transplantation (allo-HCT), especially in older patients. Maintenance therapy administered after allo-HCT is a promising strategy to attempt to reduce relapse and improve overall survival. However, many questions and challenges remain regarding this approach, including which patients should receive maintenance therapy, which agents should be used, what the ideal duration of therapy is, and what effect specific agents will have on toxicities, immunological reconstitution, and graft-versus-host disease. The data support using ablative conditioning regimen as the standard of care for patients able to receive it. Novel conditioning regimens, which incorporate enhanced anti-leukemia activity without increasing toxicity be considered. Clinical trials are ongoing, which should help begin to address some of these issues. However, new strategies are needed to identify patients most likely to benefit from maintenance or pre-emptive therapy (e.g., minimal/measurable residual disease [MRD]+, mixed chimerism, high risk disease, etc.).

Abstracts - Oral Presentation

OP-0 3

Effect of donor and red blood cells concentrate characteristics on Recipient hemoglobin increment following red blood cells Transfusion in pediatric patients

Dr. Maryam Rana

Objective:
To determine the effects of donor and red blood cells concentrate characteristics on recipient hemoglobin increment following red blood cells transfusion in pediatric patients.

Methods:
It was a cross-sectional study, carried out at The Hematology & Transfusion Medicine Department of The University of Child Health Sciences & The Children's Hospital, Lahore from December 2020 to July 2021 after Institutional Ethical committee approval. After taking informed consent from parents/guardians, 100 recipients receiving RBCs unit transfusion studied along with the respective donors. The donor's details were recorded on a pre-designed proforma which included age, gender, Body Mass Index (BMI), CBC analysis (Hb & Hematocrit) and blood group. Component's preparation date and time, storage conditions and modifications (Leukoreduction, gamma irradiation and washing) were also recorded. Date and time of commencement of transfusion were noted

and Hb levels of recipient were determined 08-12 hours prior to transfusion and 12-18 hours after transfusion. The data was analyzed on SPSS version 26.

Results:
Among recipients the mean age was 5.25±3 years and male to female ratio was 1.16: 1. The mean pre-transfusion Hb level of patients was 6.48g/dl (SD: 2.15) and mean post transfusion Hb level was 8.824 g/dl (SD: 2.03) with a significant difference after transfusion ($p< 0.001$). Majority donors (60%) were between 18 to 30 years of age and mean age was 30.7 years (SD: 9.04). The hemoglobin increments were reduced for transfusion of RBC units from donor with greater age. 56% donors had a BMI in the range of 17.1 to 25.7 kg/m2 with the mean value of 25kg/m2 (SD: 3.26). No significance of donor's BMI found as no donor fell in obesity criteria. The donor Hb level ranges from 12.5 to 17.5 g/dl with mean value of 14.7 g/dl (SD: 1.28). This Hb range resulted in required post transfusion increments. Post- transfusion Hb increment was more in Rh D positive donations than Rh D negative ($p< 0.001$). Among RBCs concentrate features, washing with normal saline found to have greater Hb increment, particularly in Thalassemia patients ($p< 0.001$).

Conclusion:
It is concluded that Donor characteristics such as age and Rh blood group and red blood cell concentrates' washing accounts for significant rise in recipient's post-transfusion hemoglobin. These factors may be used to predict changes in recipients' hemoglobin before transfusion.

Conflict of Interest:
None

Keywords:
Transfusion, Hemoglobin, Body Mass Index, Leukoreduction, Hematocrit.

Category:
Challenges in Transfusion Medicine

OP-09

Non-invasive Prenatal Diagnosis of Beta-thalassemia for Common Pakistani Mutations: A Comparative study using Cell-free Fetal DNA from Maternal plasma and Chorionic Villus Sampling

Brig Mohammad Abdul Naeem

Objective:
Non-invasive determination of paternally inherited beta thalassemia mutations in fetal cell-free DNA (Cff-DNA) by using allele-specific amplification refractory mutation system (ARMS) real-time PCR (RT-PCR).

Methods:
An observational study was conducted at the Armed Forces Institute of Blood Transfusion (AFIT) Rawalpindi in collaboration with Genetics Resource Centre (GRC) Rawalpindi. Duration was from March to August 2021. A total of 26 couples were selected for study either having beta thalassemia or affected child. Routine Chorionic Villus Sampling (CVS) was carried out for detection of mutations using conventional PCR. Compound heterozygotes detected by CVS were further analyzed by fetal cff-DNA extracted from maternal plasma using ARMS RT-PCR.

Results:
Thirteen maternal plasma samples out of 26 couples were analyzed for cff-DNA in which fetuses had different paternal mutant patterns than maternal alleles. Compared with CVS analysis by conventional ARMS PCR, 11 cases (84.6 %) were matched successfully, while 02 cases (15.4 %) had no concordance.

Conclusion:
Non-invasive prenatal testing using Fetal cff-DNA by ARMS RT-PCR can be feasible method to screen paternal inherited mutant alleles. It will save pregnant women from invasive procedures where the test is negative for paternal inheritance. However low amount of cell free fetal-DNA in maternal plasma is a limitation factor and requires further enrichment.

Conflict of Interest:
None

Keywords:
Fetal cff-DNA, NIPT, beta-thalassemia, paternal inheritance, maternal plasma.

Category:
Red Cell Disorders

OP-11

The Effect of ABO Incompatibility on the Outcome of Stem Cell Transplant

Dr. Ali Hussain Ansari

Objective:
The impact of ABO mismatch on the outcome of allogeneic hematopoietic stem cell transplant (HSCT) remains disputed. Approximately 50% HSCTs are performed across the ABO blood group barrier. The aim of this study was to determine the effect of ABO mismatch on engraftment, graft versus host disease (GVHD) and outcome inpatients undergoing allogeneic HSCT at our center.

Methods:
We performed a retrospective chart review from 2004 till 2019. Variables analysed included age, gender, diagnosis, stem cell source, type of mismatch, frequency of acute and chronic GVHD, ABO mismatch related complications (engraftment, pure red cell aplasia, haemolysis) and overall survival.

Results:
Total transplants performed during the study period were 351 of which evaluable allogeneic stem cell transplant cases were 200. Main indications were acute leukaemia (87), β-thalassemia major (45) and aplastic anemia (68).The mean age ± SD was 20.3 ± 12.7 years (range: 2-54 years). Stem cell source was peripheral blood (PB) in 87 patients, bone marrow (BM) in 51 patients and both (PB and BM) in 62 patients. One hundred and thirty-five donor-patient pairs (68%) were ABO matched while 65 were ABO mismatched (32%). Of these 65 pairs, 18 weremajor mismatched, 39 were minor ABO mismatched while 8 were bidirectionally mismatched. There was no difference in neutrophil engraftment between the two groups (p-value: 0.57). Of the 65 ABO mismatched pairs, allpatients with minor and bidirectional mismatch achieved engraftment while 89% with major ABO mismatch engrafted. In major and bidirectional group, acute transfusion reactions (febrile non-hemolytic and hemolytic) occurred frequently. No patient with ABO mismatched transplant developed pure red cell aplasia or delayed haemolytic reaction. The cumulative incidence of acute GVHD was more in the ABO mismatched group (p value: 0.03) while that of chronic GVHD was comparable. The was no difference in overall survival between the two groups

Conclusion:
Acute transfusion reactions were frequently seen in major and bidirectional ABO mismatched groups. Increased risk of acute GVHD was observed in ABO mismatched pairs. The overall survival in both groups was comparable.

Conflict of Interest:
None to declare

Keywords:
ABO incompatibility, Stem cell transplant

Category:
Bone Marrow Transplant

OP-12

The Effect of post-transplant CMV infection on the outcome of bone marrow transplant patients: a retrospective study at a tertiary care hospital

Dr. Meher Angez

Objective:
Cytomegalovirus (CMV) infection remains a major cause of morbidity and mortality in allogeneic stem cell transplant recipients despite refinements in molecular methods of diagnosis and pre-emptive treatment strategies.We aimed to characterize CMV infection and its effect on outcome of stem cell transplant at our centre.

Methods:
We performed a retrospective chart review from 2004 till 2019. Variables analyzed included age, gender, diagnosis, stem cell source, CMV status of patient (pre- and post-transplant), CMV status of donor (pre-transplant), transplant related mortality (TRM), non-relapse mortality (NRM) and overall survival.

Results:
Total transplants performed during the study period were 351 of which allogeneic stem cell transplant cases were238. Main indications were acute leukaemia (87), β-thalassemia major (45), aplastic anaemia (72), CML (10) and miscellaneous disorders (24). The mean age ± SD was 20.3 ± 12.7 years (range: 2-54 years). Stem cell sourcewas peripheral blood (PB) in 108 patients, bone marrow (BM) in 68 patients and both (PB and BM) in 62 patients.In 85% of patients and in 100% of donors CMV IgG antibody was positive pre-transplant. Approximately 10% of patients had neither IgG nor IgM antibody on pre-transplant screening. Only 1 patient had pretransplant active CMV infection (IgM positive and confirmed on PCR) who was treated till his status became negative. Approximately 16% of patients (38) developed CMV infection <100 days after transplantation. Of these, 17 patients developed a new infection while in 21 patients it was a reactivation of latent infection. There was no TRM secondary to CMV. There was no significance of stem cell source to CMV infection post-transplant (p-value: 0.50).The risk of CMV infection was increased in patients who developed acute GVHD rather than chronic GVHD (OR:3.02, p-value: 0.001). Overall survival in patients who developed CMV infection/reactivation was 82%. The NRM was 21% (median follow-up of 80 months).

Conclusion:
The frequency of CMV infection in our study was 16%. There was no TRM secondary to CMV in our study. The risk of infection was increased in patients who developed acute GVHD.

Keywords:
Bone marrow transplant, CMV infection, GVHD and transplant related mortality.

Category: Bone Marrow Transplant

OP- 14

Cytogenetic analysis of myelodysplastic syndromes in Pakistani population

Dr Faheem Ahmed Memon

Objective:
The aim of this study was to analyse the cytogenetics in the diagnosed cases 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) were females. Most patients belonged to MDS-MLD (Myelodysplastic Syndrome-Multi-lineage dysplasia), followed by MDS-EB-2 (Myelodysplastic Syndrome-Excess Blasts-2) and MDS-U (Myelodysplastic Syndrome-Unclassifiable).

Cytogenetic analysis was performed on overnight, 24-h un-stimulated and 72-h stimulated bone marrow cultures using standard procedures. The GTG (G-bands via trypsin using Giemsa) banding technique was applied, karyotypes were described according to the International System for Human Cytogenetic Nomenclature (ISCN) 2013, karyogram were made using Meta system.

Results:
Majority of the patients in study belonged to normal karyotype (37.61%), followed by complex karyotype (11.18%),deletion 5q (6%), deletion 7q (6%), Trisomy 8 (6%) and Monosomy 20 (3%).

Conclusion:
Complex Karyotype was most common abnormal karyotype as it carries adverse prognostic implications, timely documentation of that patients with early clinical follow up and allogenic stem cell transplant must be thought.

Keywords:
Myelodysplastic Syndrome, cytogenetics, Karyotyping

Category:
Acute Leukaemia and Myeloproliferative Disorders

OP -19

An efficient protocol for isolation, purification, and characterization of human erythroid progenitor cells (EPCs) from peripheral blood samples of healthy adult volunteers

Dr. Tanveer Jilani

Objective:
Erythroid progenitor cells (EPCs) can differentiate into erythroid precursors and eventually in to mature red blood cells. Cluster of differentiation (CD)34 is a known surface marker for identification of human EPCs. CD34+ cells can be isolated from peripheral blood samples using magnetic-assisted cell sorting (MACS) or by flowcytometry- mediated cell sorting. There are no reported studies from South Asia in which CD34+-derived EPCs have been isolated and purified from the peripheral blood samples obtained from healthy human adults. The aim of the present study was to isolate CD34+ cells, differentiate CD34+ cells in to EPCs, purify and characterize CD34+- derived EPCs from peripheral blood samples from healthy adult human subjects.

Methods:
Blood samples were obtained from apparently healthy Pakistani adult volunteer human subjects. Human peripheral blood mononuclear cells (PBMNCs) were separated from the blood sample by density gradient centrifugation. CD34+ cells were isolated from PBMNCs by MACS using CD34+ selection kit. CD34+ cells were differentiated in to EPCs by using erythroid expansion supplement. Purity of the CD34+-derived EPCs was assessed through immune fluorescence microscopy using monoclonal antibodies against erythroid specific surface antigens CD34, CD235a and CD71.

Results:
The purity of CD34+-derived EPCs was determined to be 95%-98%.

Conclusion:
Cord blood samples contain immature cells, which can result in contamination of PBMNCs layer. Thus, obtaining EPCs from CD34+ peripheral blood cells of healthy adult humans is superior as the risk of contamination is minimal. The method of isolation and purification of CD34+-derived EPCs used in this study is simpler, user friendly and is more efficient as compared to other techniques.

Conflict of Interest:
The authors declare no conflict of interest

Keywords:
CD34+-derived human erythroid progenitor cells, density gradient centrifugation, magnetic assisted cell sorting,monoclonal antibodies, fluorescence microscopy.

Category: Red Cell Disorders

PP- 25

Comparative analysis of light transmission aggregometry and flow cytometry indiagnosis of inherited platelet function disorders at Armed Forces Institute of Pathology

Maj Muhammad Waleed Ahmed

Objective:
Our study was designed to examine the patients of inherited platelet function i.e. Glanzmann thrombasthenia and Bernard solider syndrome by flow cytometry and light transmission aggregometry to compare the utility ofboth different techniques.

Methods:
It is a prospective cohort study. Using non-probability consecutive sampling, 102 patients were included in the study. Demographic details and clinical presentations were noted. Testing for inherited platelet function disorder included Light transmission aggregometry by 27lanzmann27-700 and Flow cytometry by BD FACS (Fluorescence activated cell scanner) Canto II. Patient selection=1) All patients previously diagnosed with 27lanzma soulier and 27lanzmann thrombosthenia by LTA were selected. Individuals of all ages and both genders were included.

Individuals with normal coagulation profile and prolonged bleeding time were selected. Patient with known coagulation factor deficiency, vascular disorders, and thrombocytopenia due to other causeswere excluded.

Results:
Out of 102 patients, male to female ratio was 1.6:1 and median age was 18.7 yrs.60 patients (59.8%) were identified as Glanzmann thrombasthenia patients; amongst these 48 patients reported extremely reduced (<5%) or even absent levels of CD41 and CD61. 12 patients revealed CD41 levels ranging from 6.0-15.4 along with CD61 levels ranging from 19.5-73.8. The results of LTA were like results of FCM in all these Glanzmann thrombasthenia pts. A total of 42 patients (41.2%) has either absent or reduced levels of CD42 identified as 27lanzma soulier patients. In these 42 patients; 06 patients (5.9%) showed CD42 levels from 0-11%, in this group LTA was inconclusive. In 36 patients (35.3%) had CD42 levels from 12-18.8 % and in these patient's results were comparable to LTA in these pts.

Conclusion:
Results of LTA and FCM were comparable for 27lanzmann thrombasthenia, but for diagnosis of 27lanzma soulier syndrome FCM has higher sensitivity than LTA. For inconclusive LTA results with BSS, FCM must be conductedto reach a final diagnosis.

Conflict of Interest:
The authors declare no conflict of interest.

Keywords:
Bernard soulier syndrome, lanzmann thrombosthenia, Inherited, light transmission aggregometry.

Category:
Platelet and Coagulation Disorders

OP-32

Detection of PNH clone by flow cytometry, using multiparameter analysis in Tertiary Care Hospital, Islamabad. Pakistan

Dr. Rabia Majeed

Objective

Background: Paroxysmal nocturnal hemoglobinuria (PNH) is a rare acquired clonal hematopoietic stem cell disorder, by somatic mutations in the PIG-A gene, leading to the production of blood cells with absent or decreased expression of Glycosylphosphatidylinositol-anchored proteins, including CD55 and CD59. PNH is manifestvariously with hemoglobinuria, thrombosis, or bone marrow failure. Clinically, PNH is classified into three variants:classic (hemolytic), in the setting of another specified bone marrow disorder (such as aplastic anemia or myelodysplastic syndrome) and subclinical (asymptomatic). PNH testing is recommended for patients with intravascular hemolysis, acquired bone marrow failure syndromes and thrombosis with unusual features. Despitethe availability of consensus guidelines for PNH diagnosis and monitoring, there are still discrepancies on how and when PNH tests are carried out, and these technical variations may lead to an incorrect diagnosis. The classical approach to diagnosis of PNH by cytometry involves the loss of at least two GPI-linked antigens on RBCs, neutrophils, and monocytes. FLAER is an Alexa488-labeled inactive variant of aerolysin that does not cause lysisof cells. Our goals were to develop a FLAER-based assay to diagnose and monitor patients with PNH and to improve detection of minor populations of PNH clones in WBC's and RBC's by using CD59 and CD55 monoclonal antibodies in other hematologic disorders. The retrospective study was aimed at assessing the incidence of patients diagnosed with PNH by using FLAER from November 2018 to October 2021 in Flow Cytometry, Clinical Laboratory at Shifa International Hospital, Islamabad.

Methods:

In a single tube assay of WBC's study, we combined FLAER with CD45, CD13, CD15 and CD14 allowing the simultaneous analysis of FLAER and the GPI-linked CD14 antigens on neutrophil and monocyte lineages. Whereas in a single tube assay for RBC's study, we combined CD235a with CD59 and CD55 for the simultaneousanalysis of CD235a with CD59 and CD55 GPI-linked proteins on RBC's. In parallel normal healthy control was also used.

Results:

Out of 182 PNH registered cases from November 2018 to October 2021, 46 (25%) specimens showed PNH clone on WBC's and RBC's. The method used for staining showed increased sensitivity of FLAER, CD55 and CD59 parameter analysis. Using this assay, we were able to detect as few as 1% PNH clone on monocytes, neutrophils,and RBC's even on low TLC counts, that were otherwise undetectable by using CD55 and CD59 antibodies on RBC's and WBC's. However, by using specified clone of CD59, we were able to detect distinct population of TypeII and Type III PNH clone on RBC's.

Conclusion:
FLAER combined with multiparametric flow cytometry analysis offers an improved assay in terms of sensitivityand specificity for diagnosis and detection of sub clinical PNH clones.

Conflict of Interest:
none to declare.

Keywords:
Paroxysmal nocturnal hemoglobinuria (PNH), FLAER, Flow cytometry, Glycosylphosphatidylinositol, Intravascularhemolysis, Bone marrow failure syndromes, aplastic anemia; myelodysplastic syndromes.

Category:
Red Cell Disorders

OP- 36

Frequency of TP53 mutation in patients with multiple myeloma

Dr. Qadeer Ahmed

Objective:
To determine the frequency of TP53 mutation by using fluorescence in situ hybridization (FISH) in patients with multiple myeloma at tertiary care hospital Karachi.

Methods:
Cross-Sectional Study.

Results:
A total of 113 newly diagnosed MM patients were included in the study. Of 113, 77 (68.1%) were male while 36 (31.9%) were female and mean age was 59.4 (±12.98) years. TP53 mutation was found in 04 (3.5%) patients, 77(68.1%) were male and 36 (31.9%) female.

Conclusion:
In this study presence of TP53 mutation was found to be infrequent in MM patients. However more studies with larger data are required to validate findings of this study. It is also appropriate to perform FISH studies for the high risk cytogenetics at baseline.

Conflict of Interest:
None

Keywords:
TP53 Mutation, FISH, Multiple Myeloma

Category:
Lymphoproliferative and Plasma Cell Dyscrasia

PP-38

Prevalence of red blood cell alloimmunization in untransfused primigravida at Liaquat University of Medical and Health Sciences, at Jamshoro/ Hyderabad

Dr Naureen Jalbani

Objective:
To determine the frequency of different alloantibodies in untransfused primigravida and types of Antibodies on RBCs.

Methods:
A total of 151 primigravida females were included in this study. After aseptic measures 6 ml of blood sample from a primigravida female was collected. Complete blood count was done on sysmex XN10000i. The following tests was performed on all blood samples; Auto control were used to check the validity of blood groups, Direct coombs test was performed as protocol, Antibody screening by immediate spin method, 22% Bovine Albumin 37 degree centigrade incubation and AHG phase, Antibody identification by immediate spin method, 22% bovine albumin 37 degree centigrade incubation and AHG phase, Phenotyping for corresponding antigens in whom specific antibody was identified.

Results:
A total of 151primigravida females were included in this study. The average age of the patients was 25.34 ±5.23 years. The mean gestational age was 1.46 ±0.50 months. Most of the women's blood group was O positive and most of the husband are also O positive.

The average age of the patients was 25.34 ±5.23 years. The frequency of RBC alloimunization in RhD positive pregnant women was 3.31% (5/151). Prevalence of Anti C was 2% (3/151), anti E in 0.7% (1/151) and anti S was 0.7% (1/151).

Conclusion:
On the bases of result, a guideline should be formulated about introduction of routine antenatal red cell alloantibody screening for just the women having Rh-negative phenotype.

Conflict of Interest:
I have no conflicts of interest.

Keywords:
Red cell alloimunization, Alloantibodies, Antibodies on RBCs

Category:
Challenges in Transfusion Medicine

PP-40

Greater viral load in novel corona virus is associated with increased inflammatory markers in plasma and poor haematological parameters leading to adverse clinical outcome and higher mortality

Dr. Hira Babar

Objective:
The purpose of our study was to correlate viral load in covid 19 patients with inflammatory markers including IL6, Procalcitonin, ferritin, LDH and hematological parameters and their effect on clinical outcome of those patients.

Methods:
It was a retrospective study conducted in Pathology department of Doctor's hospital Lahore from November 2020 to January 2021. Total 86 covid pcr positive patients were included in our study. Patients who had HRCT findings correlating with covid 19 but were PCR negative were excluded from the study. The viral load (CTs), hematological parameters and acute phase reactants values were determined at the time of presentation. The clinical outcome of all the patients was followed.

Results:
There were total 65(75.6%) males and 21 (24.4%) females with a mean age of 63.95 years. The mean value of viral load was 26.65 4.47CT. The viral load was divided in two groups, less than 30 CTs and more than 30 Cts. It was seen that high viral load was associated with lymphopenia, and raised values of IL6 and D-dimers. Total 25 patients died with a mortality rate of 29.06%. The mortality showed positive correlation with high viral load, lymphopenia, thrombocytopenia, and raised levels of LDH, procalcitonin, D-Dimers and ferritin.

Conclusion:
Hematological parameters and inflammatory markers can serve as novel prognostic factors in Covid 19 infection and should be included in routine investigation. This will help to predict the disease outcome and to make better decisions in terms of patient management.

Conflict of Interest:
None to declare

Keywords:
Covid 19. Inflammatory markers. Hematological findings. Viral Load

Category:
Platelet and Coagulation Disorders

OP- 42

The Significance of Molecular Analysis in a Population Screening Program for Identification of Silent Beta Thalassemia Carriers in a country with High Disease Prevalence

Dr. Rija Tariq

Objective:
Hematological parameters including complete blood count (CBC) followed by Hemoglobin A2 (HbA2) quantification are the most widely used screening tests conducted worldwide and help in Beta Thalassemia carrier identification and disease prevention. However, sole reliance on them can lead to misdiagnosis in individuals with HbA2 in the borderline zone (atypical or silent Beta Thalassemia Carriers). The objective of this study is to establish the importance of molecular analysis in such individuals and its significance in a population screening program.

Methods:
67 individuals suspected to be silent Beta Thalassemia carriers were tested by Multiplex amplification refractory mutation system-Polymerase Chain Reaction to identify underlying mutations. Independent samples T-test was used to compare the red blood cell indices and HbA2 values of subjects with and without underlying mutations taking P value <0.05 as statistically significant.

Results:
Of the individuals tested, 73% (n=49) had underlying Beta Thalassemia mutations. CAP+1 (n=30, 61%) was the most common mutation identified followed by IVS1-5 (n=12, 25%). Subjects with a mutation displayed a significantly lower Mean Corpuscular Volume and Mean Corpuscular Hemoglobin than those without mutation (P= 0.002 and 0.003 respectively). Mean HbA2 in the subjects with mutation was 3.4% vs mean of 3.2% for those without an underlying mutation (P = 0.011). The mean MCV and MCH of CAP+1 mutation was higher as compared to the other mutations identified.

Conclusion:
Thus, molecular analysis should be offered to all those individuals who have borderline HbA2, carrier spouse and/or suggestive family history for identification of silent carriers and effective disease prevention.

Conflict of Interest:
None

Keywords:
Borderline A2, Silent carriers, Beta Thalassemia, CAP+1 mutation, Molecular analysis

Category:
Red Cell Disorders

PP-46

Reticulocyte count and platelet count as predictors of morphological remission/hemopoitic recovery in all after induction chemotherapy

Dr. Hamzullah khan

Objective:
To determine the predictive values of reticulocyte and platelet count for remission in cases of acute lymphoblastic leukemia after induction therapy.

Methods:
This cross sectional observational study was conducted in the department of hematology, MTI Hayatabad Medical Complex, Peshawar. All cases of ALL referred to department for remission after taking induction therapy, irrespective of age and gender were included.

Results:
A total of 84 cases referred for remission were included, 56(66.7%) were males and 28 (33.3%) females. 50(59.5%) cases were in the age range of 5-18 years. The mean with standard deviation of age of patients was 15+ 4 years. 75(89.3%) of the cases were classified into ALL-1) by FAB classification. 50(59.5%) of the referred cases had achieved morphological remission by bone marrow aspiration. There was a statistically significant rise in Platelet count of the remission vs non remission cases (p-0.001). Again there was a statistically significant difference in the retic count of the cases with remission (p-0.05). We observed a statically significant downhill moderate correlation of retic count with remission (in term of blast count of BM aspiration) (p-0.04, r:-0.32). Platelet count also had an inverse significant correlation with remission (p-0.01, r:-0.37). The diagnostic roles of the peripheral platelet count and retic count yielded an area under curves of (0.768 and 0.648 respectively) to predict remission.

We observed that the retic count and platelet count has been shown to have strong predictive value for remission in ALL with interaction values of ($R= 0.28^{**}$, $\Delta R^2=0.02$, p=0.08). Similarly, an increase in platelet also has strong predictive value for remission in ALL cases with interaction values of ($R= 0.41^{**}$, $\Delta R^2=0.16$, p=0.001).

Conclusion:
In ALL cases of post induction therapy, The peripheral blood values for an increased in Retic and platelet count predict the remission with 95% confidence. These values, if strictly observed, can reduce the frequency of invasive procedures like bone marrow aspiration.

Conflict of Interest:
NIL

Keywords:
ALL, Remission, Reticulocyte count, Platelet count

Category:
Acute Leukaemia and Myeloproliferative Disorders

PP-55

Response to hypomethylating agents plus venetoclax in patients with acute myeloid leukemia and myelodysplastic syndrome: A real world experience

Dr. Khalil ur Rahman

Objective:
To assess response of Hypomethylating Agents (HMA) plus Venetoclax in patients with AML and MDS, treated at Armed Forces Bone Marrow Transplant Center, Rawalpindi.

Methods:
Study design: Single arm observational prospective study Research Setting: Armed Forces Bone Marrow Transplant Center, Rawalpindi Study population: Cases included in study were patients of AML and MDS who received HMA plus Venetoclax. A total of 31 patients (23 AML, 8 MDS) were found eligible and included in the final analysis. The primary outcome measured was response to HMA plus Venetoclax.

Results:
Out of 23 AML patients 16 (69.5%) were male and 7 (30.5%) were female. Median age of patients was 44 (range 20-67). Four (17.3%) patients had AML MRC, 16 (69.5%) had AML NOS which included 1 (4.3%) AML-M0, 1(4.3%) AML-M1, 8 (34.7%) AML-M2, 3 (13.0%) AML-M4 and 3 (13.0%) patients with AML-M5 while other 3 patients included 1 (4.3%) patient each of t-AML and AML transformed from Fanconi anemia and aplastic anemia. One (4.3%) AML-M2 patient had Monosomy 7 and 1 (4.3%) AML-M5 had trisomy 8. Three (13.0%), 14 (60.8%) and 6 (26.1%) patients were categorized into favorable, intermediate and high risk respectively. Nine (39.1%) had relapsed disease including 3 (13.0%) who had relapsed after allogenic HSCT, 8 (34.7%) had refractory disease while 5 (21.7%) were unfit for intensive chemotherapy due to advanced age or poor functional status. Median no of HMA+ Venetoclax cycles given were 3 (range 1-16). Overall response rate (ORR) was 34.7% (n=8), including 7 (30.4%) patients with CR and 1 (4.3%) with CRi. One (4.3%) patient had partial response (PR). Fourteen (60.8%) patients were non-responders. Of the 8 patients who responded, 5 (21.7%) achieved remission after 2 cycles while other 3 achieved remission, 1 (4.3%) patient each, after 1, 5 and 6 cycles. Two (8.6%) patients underwent allogenic HSCT after achieving remission, including 1 (4.3%) who had relapsed after her first HSCT and underwent second HSCT after achieving CR with HMA+Venetoclax. Out of 8 MDS patients 6 (75%) were male and 2 (25%) were female. Median age of patients was 51 (range 29-71). Two (25%) patients had MDS-MLD, 5 (62.5%) MDS-EB2 and 1 (12.5%) had fibrotic MDS. One (12.5%), 6 (75%) and 1 (12.5%) patient had intermediate, high and very high risk disease (as per R-IPSS score) respectively. One (12.5%) patient had relapsed after allogenic HSCT. Median no of cycles of

HMA+Venetoclax given were 2 (range 1-6). Two (25%) patients achieved CR (after 2 cycles each), 2 (25%) had stable disease and 4 (50%) patients were non-responders. Two (25.0%) patients underwent allogenic HSCT after receiving HMA+Venetoclax. Common side effects noted were prolonged cytopenias, febrile neutropenia and infections (cellulitis, perianal infections and fungal infections). No treatment related mortality was noted.

Conclusion:
HMA plus Venetoclax in effective treatment regimen in relapsed/ refractory AML and MDS, however our population shows inferior results as compared to Western population and further large randomized controlled trials are needed to validate this observation.

Conflict of Interest:
None to declare

Keywords:
Relapsed AML, refractory AML, MDS, salvage chemotherapy, Hypomethylating agents, Venetoclax

Category:
Acute Leukaemia and Myeloproliferative Disorders

OP-61

Prediction of PNH clones in Aplastic Anemia

Dr Uzma Rahim

Objective:
Detection and quantification of PNH Clones in Aplastic Anemia

Methods:
Prospective observational study conducted at Armed Forces Bone Marrow Transplant Centre (AFBMTC), Rawalpindi from September, 2020 to September, 2021. PNH testing was performed using high sensitivity (<0.01%) fluorescent aerolysin (FLAER)-based assay according to 2010 International Clinical Cytometry Society (ICCS) PNH Consensus Guidelines and 2012 Practical PNH Guidelines. FLAER/CD45/CD15/CD157/CD64 and CD235a/CD59 panels were used for white blood cell and red blood cell testing, respectively. The subjects of the study included all those who were presented with Pancytopenia, Bicytopenia, Anemia, Thrombocytopenia and later on diagnosed as Aplastic Anemia on bone marrow biopsy. Exclusion criteria was patients on immunosuppressive therapy and RCC transfusion within last 10 days.

Results:
A total of 116 patients were studied that included 80 (68.9%) males and 36 (31.1%) females with a male to female ratio of 2.2:1. Median age of the participants was 29.5 years (2-77 years). Out of total sample 67 were with NSAA, 35 with SAA and 14 with VSAA. A PNH clone was detected in 52.5% of the patients (n=61). In 51 of them (83.6%) a clone was detected in both RBCs and WBCs, in 2 only a WBC clone was identified, and two cases each of isolated neutrophil and monocyte PNH clone was detected. The RBC clone in 39 out of the 61 patients was less than 1%. In the remaining it ranged from 1.06 to 37.3%.

Conclusion:
This is the first study to use a standardized high-sensitivity FLAER-based flow cytometry assay to identify cells with PNH phenotype in patients with aplastic anemia in Pakistan. The identification of a PNH population in 52.5% supports the recommendation for high sensitivity PNH testing in patients with aplastic anemia.

Conflict of Interest:
No potential conflict of interest was reported by the authors.

Keywords:
Aplastic anemia, PNH, FLAER, CD55 CD59

Category: Bone Marrow Failure Syndromes

OP-63

Outcomes of patients with double/triple expressor Diffuse large B-cell lymphoma (DLBCL) treated with R-DA-EPOCH/R-CHOP: A single-center experience.

Dr. Kanta Devi

Objective:
To determine the survival outcomes of patients with double/triple expressor diffuse large B-cell lymphoma treated with R-DA-EPOCH/R-CHOP

Methods:
Retrospective follow-up study was conducted to investigate outcomes of patients treated for the DE/DH or TE/TH subtype of DLBCL at Oncology practices in the Aga Khan University Hospital Karachi, Pakistan. Included patients which were treated from January 1, 2019, to December 31, 2020, with either DA-REPOCH or R-CHOP

Results:
The results of this study indicated that the survival rate from DA-REPOCH is 83.3% and R-CHOP 78.9%. The median progression-free survival was 12.6 months, and the median overall survival was 16.8 months. Both univariate and multivariable analysis showed that the treatment regimen, disease expressors, and toxicity were the significant prognostic factors for the overall survival.

Conclusion:
R-DA-EPOCH is a well-tolerated regimen with a good survival rate. A multicenter, large-scale study with equal distribution for chemotherapy is needed for comparison to establish the status of the R-DA-EPOCH regimen and first-line therapy for these high-risk DLBCL patients.

Conflict of Interest:
No

Keywords:
Diffuse Large B-cell lymphoma, Non-Hodgkin Lymphoma, R-DA-EPOCH, R-CHOP, Survival

Category:
Lymphoproliferative and Plasma Cell Dyscrasia

OP-83

Implementation of Quality Performance Indicators in a New Hematology Analyzer- Coulter DxH 900

Dr. Anila Aali

Objective:
The objective is to evaluate the analytical performance of DxH900 analyzer through SDI and CVI further we are comparing the obtained results with peer group through IQAP.

Methods:
In this study between day precision was assessed by analyzing all three types of quality control samples during eight consecutive months .Mean ,standard deviation (SD) and coefficient of variation (CV),SDI and CVI were calculated for hemoglobin, WBC, RBC, hematocrit Hct and Platelet and compared with the other peer groups via IQAP program by Beckman coulter. As well as the daily result of Hb, Hct, RBC, WBC and Plt were also compared and P value was calculated to assess the precision and reliability of results generated by DxH Coulter. We didn't evaluate the within ACA, AE run precision by analyzer in this study.

The analyzer was calibrated using stabilized calibration material from Beckman Coulter. Preciion assay was performed according to CLSI–EP9 for clinical and laboratory studies.

Results:
Precision essays were performed according to CLSI-EP9 for Clinical and Laboratory studies. Between-day analysis compared three levels of quality control of different parameters runs 3 times a day. The measured parameters of DxH 900 coulter were discussed here. All parameters (Hb, WBC, Hct, RBC, Plt) are run in three shifts per day showed good precision >0.05.

In addition to this the QC results are also compared with the peer group on IQAP shows most of the parameters CVI and SDI is comparable with the peer group, indicate the high level of precision and accuracy in the analyzer result.

Conclusion:
In IQAO program comparison of Hb, WBC and Plt results show good precision and reproducibility of a hematology analyzer i.e DxH Coulter 900 to ensure that patient/clinician receive authentic results.

Conflict of Interest:
None to declare.

Keywords:
SDI, CVI, IQAP

Category:

OP-103

Prevalence of bone marrow involvement in neuroblastoma and its correlation with hematological profile

Dr. Salma Ahmed

Objective:
To study prevalence of bone marrow involvement in neuroblastoma and its correlation with hematological profile.

Methods:
All cases of neuroblastoma referred for bone marrow examination from May 2021 to October 2021 were included. Primary diagnosis neuroblastoma was made on histopathology and clinical radiological findings. Bone marrow biopsy was done from posterior superior iliac spine and bone marrow biopsy sections and smears were stained by H and E stain and Giemsa stain respectively. In all cases routine morphology, morphological bone marrow details, presence and absence of neuroblastoma infiltration and if present its pattern was recorded. In addition peripheral blood count and peripheral blood film was also recorded.

Results:
Out of 30 newly diagnosed cases (6 month to 11 year of age), 12 cases show marrow infiltration. 80% cases were less than 5 years of age with male preponderance.

CBC in involved Cases showed anemia in 85% cases. WBC count below 4 was seen in 20 % cases and Platelet count below 150 in 10% cases and uninvolved cases anemia was seen in 75 % and leucopenia and thrombocytopenia in 10 % cases.

Overall bicytopenia in 20% of involved cases and none of uninvolved case showed it. Marrow infiltration Pattern was in the form of rosette formation, and there was the diffuse and interstitial pattern of infiltration. Both aspirate & trephine biopsy show infiltration in 12 out of 30 cases. only aspirate and only trephine Show infiltration in 5 Cases.

Conclusion:
In the present study we found presence of bone marrow involvement in 45 % cases. Cases showing infiltration had bicytopenia when compared to cases without infiltration.

Conflict of Interest:
None

Keywords:
N/A

Category:
Bone Marrow Failure Syndromes

Abstracts - Poster Presentation

PP-01

Association of Elevated D-dimers with Severity and Outcome of COVID-19 Infection in Children

Dr. Nazish Saqlain

Objective:
To analyze the relationship of D-dimers with the disease severity and outcome of children with COVID-19 and MIS-C presenting to a single center.

Methods:
It was a descriptive cross-sectional study carried out at The University of Child Health Sciences & The Children's Hospital, Lahore, from March 15th to December 31st, 2020. We analyzed D-dimers levels and clinical data of all laboratory-confirmed cases of SARS-CoV-2 infection and MIS-C in children admitted to the hospital.

Results:
A total of 110 children, 81 (73.6%) with COVID-19 and 29 (26.4%) with MIS-C were admitted during the specified period. In 45 (41%) there was a pre-existing comorbidity. Among the COVID-19 cases, mean age was 6.84±4.77 years while in MIS-C patients it was 7.56±3.23 years. Male preponderance was seen in both groups. D-dimer was done in 67 patient [COVID; n=40- 50%) & MIS-C; (n=27- 93%)] who presented with mild-moderate, severe, and critical disease. Mean D-dimer levels in MIS-C were 4.61±4.0ug/ml and in COVID-19 were 3.05±4.6ug/ml. Thirty five of COVID and 37% of MIS-C cases had severe & critical disease. A high D-dimer value was significantly associated with severity and poor outcome ($p<0.001$) in COVID-19 cases. No such association was found in MIS- C patients ($p=0.828$) although higher D-dimers levels were noted as compared to COVID-19. There were six deaths (5.5%), 5 cases of COVID-19 & one due to MIS-C. All five COVID-19 patients had an underlying comorbid condition.

Conclusion:
A high D-dimer value is significantly associated with severe disease and poor outcome in children with COVID-19, but no such association was found in MIS-C. The presence of an underlying co-morbid condition was a risk factor for poor outcome among COVID-19 patients.

Conflict of Interest:
None

Keywords:
D-dimers, Coronavirus, coagulopathy, children.

Category: Platelet and Coagulation Disorders

PP-02

Hematological and biochemical parameters as diagnostic and prognostic markers in SARS-COV-2 infected patients of Pakistan: a retrospective comparative analysis

Dr. Atiqa Khalid

Objective:
This study was conducted to investigate alteration in blood parameters and their association with the presence, severity, and mortality of COVID-19 patients as the data on hematological abnormalities associated with the Pakistani COVID-19 patients is limited.

Methods:
A double-centered, hospital-based comparative retrospective case study was conducted, to include all the admitted patients (n = 317) having COVID-19 Polymerase chain reaction (PCR) positive. The control group (n = 157) tested negative for COVID-19.

Results:
Of 317 admitted cases, the majority were males n = 198 (62.5%). Associated comorbidities, lower lymphocytes, platelets, and higher White blood cells, neutrophil, neutrophil-to-lymphocyte ratio (NLR) and platelet-to-lymphocyte ratio (PLR) were found in COVID-19 cases as compared to healthy controls ($p < 0.001$ for all). The biochemical parameters of cases including Ferritin, D-Dimer, CRP, IL-6, LDH, ALT, AST, and APTT also showed a statistically significant difference compared with standard values ($p < 0.001$ for all). However, their comparison with a severity level of the severe and non-severe groups showed significance for WBCs, neutrophils, NLR ($p < 0.001$ for all), and PLR ($p = 0.06$) only. Receiver operating characteristic curve analysis showed that NLR had the highest area under curve (0.84) followed by 1/lymphocyte (0.82), neutrophils (0.74), PLR (0.67),1/platelets (0.68) and WBC's (0.65). Comparison of cases and controls with recommended cut-off values derived from sensitivity and 1-specificity was also done ($p < 0.001$).

Conclusion:
Monitoring all the hematological and biochemical parameters including novel hemograms NLR, PLR can aid clinicians to identify potentially severe cases at early stages and initiate effective management in time which may reduce the overall mortality of COVID- 19 patients.

Conflict of Interest:
None declared

Keywords:
COVID-19 SARS-CoV-2; biomarkers; hematological parameters; disease severity; diagnostic criteria; cutoff values; NLR; PLR

Category:
Platelet and Coagulation Disorders

PP- 04

Rare case of Mediastinal Myeloid Sarcoma

Dr. Kanta Devi

Objective:
Rare presentation, challenging diagnosis and management

Methods:
case report

Results:
case report

Conclusion:
We are discussing a rare presentation of myeloid sarcoma with isolated anterior mediastinal mass and chemo refractory disease but had excellent response to radiation. This case report showed atypical presentation which was challenging for diagnosis and for treatment as well.

Conflict of Interest:
No

Keywords:
myeloid sarcoma, chemo refractory, AML

Category:
Acute Leukaemia and Myeloproliferative Disorders

PP-05

Prevalence of depression, anxiety and psychosocial support among transfusion dependent thalassemia major patients

Dr. Misbah Sharif

Objective:
The aim of the study is to assess the level of depression and anxiety among thalassemia major patients and to find out which category, friends, family and others, is providing more psychosocial support.

Methods:
We conducted a cross sectional study in Karachi on a sample of 400 Thalassemia patients (TP),aged between 8- 18, using three sets of questionnaires on demographic data, anxiety and depression and Psychosocial support (PSS) respectively.

Results:
The HADS (Hospital anxiety and depression scale) was subdivided into anxiety and depression. The depression scale showed that 238 (59.5%) patients were normal, 118 (29.5%) was borderline and 44 (11%) were abnormal cases i.e. showed signs of depression. The anxiety scale showed that 130 (32.5%) patients were normal, 93 (23.3%) were borderline and 177 (44.3%) were abnormal cases. The MSPSS(Multidimensional scale of perceived psychosocial support) which was further subdivided into friends, family and others. For the category of friends, the results showed that 177 (29.3%), 184 (46%) and 99 (24.8%) patients reported low, moderate and high support respectively. The category of family showed that 1 (0.3%), 24 (6%) and 375 (93.8%) showed low, moderate and high support respectively. The category of others showed a frequency of 260 (65%), 60 (15%) and 80 (20%) patients showed low, moderate and high support respectively.

Conclusion:
We concluded that title and objective was significantly true and anxiety was found greater than depression in TP. Patients mostly received strong PSS from their families. Furthermore, hospitals and clinical centers must play an active role in providing both physical and mental support to TP along with efficient medical facilities.

Conflict of Interest:
Patients younger than 8-18 years of age were unable to communicate well so their attendants answered the questionnaire, also most patients belonged to interior Sindh which posed a language barrier. Our research couldn't be expanded due to refusal of permission from government hospitals. The allocated time period of 5 months meant higher chances of patient repetitions.

Keywords:
Thalassemia; Anxiety; Depression; Psychosocial Support.

Category:
Challenges in Transfusion Medicine

PP-06

Association of mean platelet volume / platelet count ratio with clinical severity and infarct volume in patients with acute Ishemic stroke

Dr. Muhammad Wasi Nayyar

Objective:
To examine the clinical severity and infarct volume of acute ischemic stroke (AIS) compared to control subjects by comparing the mean platelet volume/platelet count (MPV/PC) ratio.

Methods:
Study Design: Cross-sectional (validation) study.

Place and Duration of Study: Acute Stroke Unit, Pakistan Emirates Military Hospital (PEMH), Rawalpindi, Pakistan, between July 2020 and December 2020.

Methodology:
There were 50 consecutive AIS patients (Group-1) and 50 healthy subjects (Group-2) included in this study. An automated haemanalyser determined MPV and MPV/PC ratios. Modified Rankin Scale for the severity of AIS and ABC/2 method for infarct volume was used.

Results:
This study comprised of 69 males and 31 females. In the cases studied, the average age was 58.6 ± 8.2 years in Group-1, and that of Group-2 was 61.0 ± 8.3 years. Statistical analysis showed that MPV and MPV/PC have significantly different mean values between the Group-1 and Group-2 at a p-value of 0.001. In addition, a significant difference of means (p-value <0.001) of MPV and MPV/PC ratio was present between stroke patients with different infarct sizes according to the Rankin scale. A higher CVA score per Rankin scale was associated with greater infarct size and higher MPV and MPV/PC values.

Conclusion:
Higher MPV and MPV/PC ratios are related to AIS compared to healthy individuals. Even greater MPV and MPV/PC ratio values are associated with an increase in infarct

size. MPV and MPV/PC ratio measurements are simple, rapid, and highly cost-effective laboratory markers for risk stratification and early detection of cerebrovascular stroke.

Conflict of Interest:
This study has no conflict of interest to be declared by any authors

Keywords:
Infarct volume, Mean plate volume, Platelet count, Rankin scale, Stroke

Category:
Platelet and Coagulation Disorders

PP-07

Response of Eltrombopag in immune thrombocytopenia and acquired idiopathic Aplastic anemia: A single-center experience

Dr. Abdul Muqtadir Abbasi

Objective:
Eltrombopag has been used in ITP and found its use in AA armamentarium recently.

Methods:
This retrospective chart review was conducted using electronic medical records (EMR) for 60 male and female patients being treated with ELT for Severe Aplastic anemia and Immune thrombocytopenia from January 2015 to January 2021 at a tertiary care hospital in Karachi, Pakistan.

Results:
Complete response was seen in 53.1% AA patients (p=0.001) while 86.2%, p=0.033) patients showed good response in ITP with manageable side effects. Complete/good response to treatment was seen in (53.1 vs 13.3) % AA and (86.2vs76.7) % ITP patients in ELT vs Non-ELT group.

Conclusion:
Eltrombopag shows promising results and is safe and efficacious agent for treating patients with ITP and AA.

Conflict of Interest:
None

Keywords:
Eltrombopag, ITP, Aplastic anemia, efficacy, safety profile

Category:

PP-13

Pre-biotics & iron fortificants improve transferrin & total iron binding capacity levels in iron deficient women of reproductive age

Dr. Abdul Momin Rizwan Ahmad

Objective:
The current research was designed to determine the synergistic effects of prebiotics and iron fortificants on serum transferrin, transferrin saturation and TIBC (total iron binding capacity) levels in iron deficient women of reproductive age.

Methods:
For this purpose, a double blind randomized control study was designed taking n = 75 iron deficient women of reproductive age group. All willing female adults without any chronic diseases such as diabetes or hypertension were included in the study while married females or those with chronic diseases or those already taking iron and/or prebiotic supplements were excluded. n = 75 women were divided into four treatment and one control group, so as to provide them with varying combinations of prebiotics and iron fortificants on daily basis for 12 weeks. Two prebiotics including Galacto oligosaccharides and Inulin and two iron fortificants namely ferrous sulphate and sodium iron EDTA were selected. Overnight fasting blood samples were taken from women at baseline, 30th, 60th and 90th days, respectively.

Results:
Mean square values for serum transferrin, transferrin saturation and total iron binding capacity levels indicated that there existed significant variations for the effect of groups, study intervals as well as the interaction between groups and study intervals (P-value < 0.05).

Conclusion:
The study concluded that prebiotics and iron fotitificants in combination with each other could significantly improve iron deficiency parameters among women of reproductive age. This potential could further be exploited to treat the menace of iron deficiency anemia, which is a huge public health problem globally.

Conflict of Interest:
None to declare

Keywords:
Red cell disorders; Anemia; Iron Deficiency Anemia; Prebiotics; Iron Fortificants; Transferrin; TIBC; Public Health

Category: Red Cell Disorders

PP-15

Megakaryocytic Clustering in Chronic Myeloid Leukemia: Can it be a Predictor of Clinical Outcome?

Dr. Zunairah Mughal

Objective:
To compare clinical outcome in patients of chronic myeloid leukemia (CML) with and without megakaryocytic clustering.

Methods:
Ninety-four patients diagnosed with chronic phase of CML were included. Complete record of complete blood count, splenomegaly, findings of bone marrow aspirate and trephine biopsy was noted. Bone marrow trephine biopsy was reviewed for megakaryocytic clustering. Sokal scoring was done; and follow-up data for clinical outcome, i.e complete hematological response (CHR) at 3 months and major molecular response (MMR) at 6 months and 1 year (as per Institute's protocol) was obtained. All the data were analysed using SPSS version 25.

Results:
Megakaryocytic clustering was present in 57 (60.6%) patients and absent in 37 (39.4%). In patients with megakaryocytic clustering, CHR was absent in 12 (21.1%), MMR at 6 months was absent in 21 (36.8%) and MMR at 1 year was absent in 25 (43.9%) patients. In patients without megakaryocytic clustering, absent CHR, MMR at 6 months and MMR at 1 year were seen in 1 (2.7%), 2 (5.4%) and 2 (5.4%x), respectively. The correlation of megakaryocytic clustering and high sokal score was found to be statistically significant with a p-value <0.001.

Conclusion:
Patients with megakaryocytic clustering have poor clinical outcome as indicated by their sokal score, absent CHR, MMR at 6 months and 1 year.

Conflict of Interest:
None

Keywords:
Chronic myeloid leukaemia, Megakaryocytic clustering, Complete haematological response, Major molecular response, Cytogenetic response.

Category:
Acute Leukaemia and Myeloproliferative Disorders

PP-16

Monocyte distribution width, a novel biomarker for early sepsis screening; in comparison with procalcitonin and c-reactive protein: A pilot study

Dr. Sidra Maqsood

Objective:
The current study aimed to compare the diagnostic accuracy of the MDW for early detection of sepsis which can be achieved in initial CBC to two well-known sepsis biomarkers, Procalcitonin (PCT) and C- reactive protein (CRP).

Methods:
Between July 2021 and October 2021, we conducted a cross-sectional observational study of 111 patients. The patients with fever and hospitalization of >24 hours with suspicion of sepsis were included in the study. MDW was evaluated in the first CBC which was performed on the day of admission

Results:
A total of 111 patients have included in which males were 55 (49.5%) and females were 56 (50.5%). Children were 13 (11.7%) and adults were 98 (88.3%). The median ages (IQR) of pediatric and adult patients were 3(2-13.50) and 55.50 (38.75-64) respectively. We compared the diagnostic performance in sepsis prediction; the area under curve (AUC) of MDW was found to be comparable with that of PCT (0.794, 95% CI: 0.652–0.936; p-value 0.000*) and CRP (0.777, 95% CI: 0.491-1000; p-value 0.026*). In our understanding, >20.24 was the significant cut-off value for the MDW with 86% sensitivity and 73% specificity. MDW values were significantly higher in patients with sepsis i.e., 68(93.2%) in comparison to those within the no sepsis group.

Conclusion:
MDW may have a predictive ability similar to PCT and CRP in terms of sepsis. There is a need to confirm these findings on a large cohort of patients to use MDW as a standard parameter for the timely diagnosis of sepsis.

Conflict of Interest:
None

Key words
Biomarkers, PCT, monocyte distribution width (MDW), sepsis.

Category: Red Cell Disorders

PP-17

Validation and comparison; A step towards the automation for measuring the erythrocyte sedimentation rate

Dr. Mamona Mushtaq

Objective:
The erythrocyte sedimentation rate (ESR) is of the widely used indicator to monitor the activity of various inflammatory diseases. Ves-Matic Cube 30 is an automated instrument based on the modified Westergren principle, used to measure the ESR. This study is aimed to assess the analytical performance of the Ves-Matic analyzer as per the recommendation of the International Council for Standardization in Haematology (ICSH) in comparison to the standard method.

Methods:
The method validation was performed which included the determination of intra-run, inter-run precision and reference range verification. Further, the automated method was compared to the reference method by plotting the Passing-Bablok regression equation and the agreement assessment using the Bland and Altman test.

Results:
Intra-run precision assessed with patient's samples at three levels yielded the coefficients of variation (CVs) of 15.06%, 7.62% and 3.16% whereas, inter-run CVs of 12.29% and 5.68% for the quality control samples with normal and abnormally high ESR range, respectively. A strong positive correlation was observed between Westergren and Ves-Matic methods with Spearman's coefficient of 0.97 (p value of < 0.001). The Passing-Bablok regression analysis yielded an intercept and slope of -0.904 and 0.957 respectively. The Bland and Altman analysis revealed good agreement with a bias of 2.1 mm/hour between the tested analytical methods.

Conclusion:
The Ves-Matic Cube 30 analyzer can be used in high workload clinical settings for ESR measurement as the generated results were in concordance with the reference method.

Conflict of Interest:
None

Keywords:
Erythrocyte sedimentation rate, Ves-Matic Cube 30, Bland and Altman, Passing-Bablok regression.

Category:
Red Cell Disorders

PP-18

Molecular spectrum of beta thalassemia trait in female at Hyderabad Sindh

Dr. Sumera Abbasi

Objective:
To find mutations inside beta globin gene in beta thalassemia carrier females.

Methods:
This descriptive, cross-sectional study was conducted at Department of Pathology, Liaquat University of Medical and Health Sciences, Jamshoro and Diagnostic and Research Laboratory Liaquat University Hospital Hyderabad, during 6 months from March 2021 to August 2021. All cases of beta thalassemia minor diagnosis on routine investigation during first trimester of pregnancy who have MCV < 76 fl and MCH < 27 pg are included in this study. six ml blood sample was collected from patients, and then distributed into two EDTA tubes. 3 ml EDTA tube was used for Complete blood count (CBC) and HB electrophoresis and 3 ml EDTA sample was used for ARMS PCR. All the data was recorded via self-made proforma and analyzed by using SPSS version 21.

Results:
The study population consisted of 146 female participants, out of which 73 were cases of beta thalassemia minor females and 73 healthy controls were also taken. The mean age calculated for cases was 26.83 and controls were 27.05 .Most of the cases were found to have consanguineous marriage 72.6% (53/73) and family history of thalassemia 74% (54/73), while in 27.4% (20/73) and 26% (19/73) subject's consanguineous marriage and family history of thalassemia were absent respectively. Mean hemoglobin (HB) level among cases was 10.10, while in controls mean HB level was 12.32 g/dl. MCV and MCH in cases were also found to be on lower side as compared to controls. HB electrophoresis results were HB A1 and HB F were normal while HB A2 was raised in our cases. In controls all three parameters (HB A1, HB F, and HB A2) were normal.

ARMS PCR showed the most common mutation was IVS-1-5 (42.5%) found in 31 cases, the second most common mutation was Fr 8/9 (27%) found in 20 cases, the third most common mutation was IVS-1-1 (8%) found in 06 cases, the fourth most common mutation was Del -619 (5.5%) found in 4 cases, CD-30 (5.5%) found in 4 cases, and CD-5 (5.5%) found in 4 cases, and the fifth most common mutations was Fr 16 (3%) found in two cases, and Fr 41/42 (3%) found in only two cases of selected Beta patients.

Conclusion:
It concluded that In Hyderabad and surrounding Areas IVS1-5, fr 8/9, IVS1-1, Del-619, CD-30, CD-15, fr 16 and fr 41/42 mutation was found, out of them mutations (IVS-1-5 and Fr 8/9) were found to be the most common in beta thalassemia. ARMS PCR assay can be

employed as a sensitive molecular diagnostic and screening test for - thalassaemia in our Pcommunity.

Conflict of Interest:
No any

Keywords:
Beta thalassemia, arms PCR, mutations.

Category:
Red Cell Disorders

PP-20

Comparison of semi-quantitative and quantitative d-dimers role in prognosis in intensive care patients

Dr. Sumaira Ilyas

Objective:
The objective of study is to compare sensitivity and specificity of quantitative and semi-quantitative D-dimers.

Methods:
It was a cross-sectional study conducted at the Department of Hematology, Armed Forces Institute of Pathology (AFIP), Rawalpindi, Pakistan from Jan 2021-Jul2021. Patient sample is collected in Trisodium citrate The two D- dimer assays were carried out i.e. semi-quantitative by latex agglutination and quantitative by immunoturbidimetric. A value of <200 ng/ml on semi-quantitative analysis and <0.5mg/L FEU on quantitative analysis were considered as normal. Findings were noted down on a predesigned proforma and were compared with the findings of ultrasound which was done as gold standard.

Results:
The mean age (in years) and quantitative test values were 51.4119.36 and 1702.531365.64 (3.5). There were 69.1% males and 30.9% females. The frequency of semi-quantitative latex agglutination values in <200 range was seen in 4.9% patients, >200 to < 400 was seen in 8.6%, >400 to <800 was seen in 32.7% patients and >800 to <1600 was seen in 53.7%. 54.3% patients on ultrasonography had confirmation of venous thromboembolism. The sensitivity, specificity, PPV, NPV and accuracy of latex agglutination method was 54.3%, 89.3%, 57.2%, 4.9% and 59.8% respectively, and of immunoturbidimetric was 98.9%, 54.7%, 55.4%, 80.6% and 56.2% respectively.

Conclusion:
Semi-quantitative latex agglutination assay of D-dimers though had moderate sensitivity and specifity compared to quantitative immunoturbidimetric assay, prognostic accuracy for detecting venous thromboembolism was higher for semi-quantitative analysis. As it is cost effective and readily available so semi-quantitative latex agglutination assay can be carried out in all patients with a suspected venous thromboembolism in intensive care as a screening tool.

Conflict of Interest:
No conflict of interest

Keywords:
D-dimers assay, Thromboembolic events

Category:
Platelet and Coagulation Disorders

PP-21

Determination of conventional centrifugation with rapid centrifugation technique for assessment of coagulation testing

Dr. Laraib Abbasi

Objective:
The key purpose of this study was to determine the effectiveness of rapid centrifugation technique in comparison of conventional centrifugation technique for the assessment of coagulation test.

Methods:
This was cross-sectional prospective study, conducted at Department of Pathology, Indus Medical College Hospital, Tando Muhammad Khan for a period of one year. 289 patients were included in this study for analysis of coagulation tests i.e., PT, APTT, INR etc. by paired samples. One sample from each patient was analyzed using regular centrifugation of work bench at 2500rpm for 20 minutes, while second sample was segregated into aliquots of polypropylene, followed by centrifugation at 11800rpm for 3 minutes in microcentrifuge. Plasma from both samples were analyzed for prothrombin time (PT) and activated partial thromboplastin time (APTT) using commercial thromboplastin along with phospholipid and prothrombin reagent along with calcium chloride respectively. The data was analyzed with the use of SPSS 24.0. Descriptive statistics and student t-test were used for analysis of data. A p-value of <0.05 was measured as significant statistically.

Results:
The mean prothrombin time (PT), activated partial thromboplastin time (APTT) and international normalized ratio (INR) showed no statistically significant results when compared in both methods ($p > 0.05$).

Conclusion:
Technique of rapid centrifugation can be safely used with significant turnaround time reduction. This technique is very useful in critically ill patients and outdoor patients on anticoagulant treatment.

Conflict of Interest:
None

Keywords:
Coagulation tests, prothrombin time, activated partial thromboplastin time, centrifugation, turnaround time.

Category:
Platelet and Coagulation Disorders

PP-22

Significance of Immature platelet fraction in diagnosed patients of immune thrombocytopenic purpura

Dr. Mohammad Shabih Haider

Objective:
To determine the significance of immature platelet fraction (IPF) in diagnosed patients of Immune thrombocytopenic purpura (ITP).

Methods:
This cross sectional study was carried out at department of Haematology Armed forces institute of pathology (AFIP Rawalpindi) between November 2020 to October 2021. Sample size was calculated by WHO calculator as 72. Sampling technique was non probability consecutive sampling. Diagnosed patients of ITP both male and female were included in the study irrespective of age. Detailed clinical history was taken and examination was done using ISTH bleeding score. CBC was done on fully automated haematology analyzer Sysmex XN-3000. Peripheral blood was examined to rule out pseudo thrombocytopenia and abnormal cells. Immature platelet fraction was run on Sysmex XN 3000 after adequate quality control.

Results:
Mean age of patients was 20 years ± 12.8 . Thirty four (48%) patients were males and thirty eight (52%) were females. Mean platelet count was 47.8 ± 24.5. Mean IPF was 17.9 ± 10.5. IPF was raised in 86% patients of ITP confirming our hypothesis that immature platelet fraction is an independent predictor for detection of immune thrombocytopenic purpura.

Conclusion:
IPF is a useful parameter and can reliably identify patients having thrombocytopenia due to peripheral destruction of platelets. IPF has a high clinical utility in the laboratory diagnosis and treatment of thrombocytopenia since raised IPF levels are related to increased peripheral platelet destruction. It is particularly useful for supporting the diagnosis of ITP together with clinical history, physical examination, CBC, peripheral blood examination. Bone marrow being an invasive and procedure is not required with the incorporation of IPF.

Conflict of Interest:
None

Keywords:
Immune thrombocytopenic purpura (IPF), Immature platelet fraction (IPF)

Category: Platelet and Coagulation Disorders

PP-23

Bone marrow infiltration by Non-Hodgkin lymphoma, an experience in a tertiary care Centre

Dr. Maymoona Suhail

Objective:
To determine the frequency and patterns of bone marrow infiltration by Non-Hodgkin Lymphoma, in a tertiary care centre.

Methods:
100 patients from both genders, with ages ranging from 20-80 years, having histologically confirmed Non-Hodgkin Lymphoma were included in the study after taking informed written consent. Sample size was calculated using WHO sample size calculator and non-probability sampling technique was used. After taking detailed history and assessing patients clinically, complete blood count was done and all patients underwent bone marrow aspirate and trephine biopsy from the posterior superior iliac spine as per standard protocol. The slides of the bone marrow aspirate were assessed and all findings were noted down on a predesigned performa.

Results:
Mean age of the study population was 54.99 ± 12 years and mean duration of symptoms was 3.82 ± 1.5months.There were 67% males and 33% females with male to female ratio of 2:1. The commonest type of Non- Hodgkin lymphoma was Diffuse Large B-cell Lymphoma i.e. (43%) followed by Follicular Lymphoma (23%) and B-cell lymphoproliferative disease (10%). Marrow infiltration was seen in 26% patients with 5% in diffuse large B- cell lymphoma, 9% in Follicular Lymphoma, 4% in B-cell Lymphoproliferative disease and 2% each in patients having Mantle cell lymphoma, T-cell lymphoblastic leukemia, low grade B-cell lymphoma, and High grade B cell lymphoma. The commonest pattern of infiltration observed was diffuse (14%), followed by focal/nodular (8%), interstitial (2%) and paratrabecular (2%).

Conclusion:
The commonest type of Non-Hodgkin lymphoma found was Diffuse Large B-cell lymphoma. Marrow infiltration was most commonly seen in Follicular lymphoma followed by Diffuse Large B-cell lymphoma, thus a high index of suspicion of marrow infiltration should be kept in all cases of the two. The commonest pattern of infiltration found was diffuse type. It is also pertinent to mention that maximum patients having hepatosplenomegaly and lymphadenopathy also had marrow infiltration.

Conflict of Interest:
None

Keywords:
Bone Marrow, Infiltration, Non-Hodgkin lymphoma

Category:
Lymphoproliferative and Plasma Cell Dyscrasia

PP-24

Diagnostic accuracy of immature platelet fraction (IPF) to differentiate between thrombocytopenia due to peripheral destruction versus bone marrow failure

Dr. Muhammad Bilal Asghar

Objective:
The objective of this study is to analyze the predictive value of IPF as an independent diagnostic marker to differentiate between hyperdestructive and hypoproductive thrombocytopenia.

Methods:
This is a cross-sectional validation study, in which sysmex XN-3000 was used to determine IPF value of total of 167 patients. Among these 105 were normal individuals, 27 were with hyperdestructive thrombocytopenia (ITP, TTP, DIC) and 35 were with hypoproductive thrombocytopenia (Acute leukemia, Aplastic anemia, chemotherapy). Data was analyzed by SPSS v 17.

Results:
Results of our study were consistent with international studies, that IPF is an excellent indicator of bone marrow function in cases of thrombocytopenia.

Conclusion:
IPF is an excellent indicator of bone marrow function in cases of thrombocytopenia as shown by the results of our study and can serve as a tool to differentiate between the central and peripheral causes of thrombocytopenia.

Conflict of Interest:
None

Keywords:
IPF, thrombocytopenia, bone marrow failure, hypoproductive thrombocytopenia, hyperdestructive thrombocytopenia, aplastic anemia, ITP, TTP, DIC.

Category:
Platelet and Coagulation Disorders

PP-26

Genotypic frequency of RHC Antigen in women of Reproductive age

Saima Bashir

Objective:
To determine genotypic frequency of Rhc antigen in women of reproductive age.

Methods:
A descriptive cross-sectional study conducted at Armed Forces Institute of Transfusion (AFIT) and Pak Emirates Military Hospital (PEMH) from (January to December 2021). Females with age group 16 to 45 years were included in the study. Data comprising basic demographic variables (age, ethnicity, parity) etc was noted on a proforma. Three ml venous blood was collected in EDTA and DNA extracted by using 5% Chelex. Conventional PCR was carried out and products ran over Polyacrylamide Gel electrophoresis (PAGE). SPSS Version 23 was used for statistical analysis.

Results:
Amongst 200 cases 174 were found to have Rhc antigen while 26 patients do not have the respective antigen. So from our study it has been ruled out successfully that in our population the frequency of Rhc positive cases is more as compare to negative cases. So, chances of developing HDFN are less in our population.

Conclusion:
The genotypic frequency of Rhc positive cases in our population is 86%.

Conflict of Interest:
The Author has no conflict of interest.

Keywords:
Genotyping, HDFN, PCR

Category:
Challenges in Transfusion Medicine

PP-27

Phenotypic and Genotypic comparison of Duffy blood group system in patients of chronic renal failure

Dr. Omama Abbasi

Objective:
To compare phenotypic and genotypic frequencies of Duffy blood group system in patients of chronic renal failure having multiple transfusions.

Methods:
This prospective cross-sectional study was carried out at Armed Forces Institute of Transfusion from January to December 2021. A total of sixty patients of chronic renal failure who have received multiple transfusions were included in the study. Phenotyping was performed on each blood sample by indirect anti-globulin test using commercially available anti-sera (Bio-Rad USA™). Genotyping was done using conventional PCR and amplified products were run over polyacrylamide gel electrophoresis. For statistical analysis, SPSS version 26 was used.

Results:
Out of total 60 patients, discrepancies between phenotype and genotype of Fy^a and Fy^b were observed in 26(43%) patients. Among these, 18 (30%) patients were serologically positive for Fya or Fyb while being negative on genotyping. In these 18 cases, 3 were false positive for Fya and 15 were false positive for Fyb on phenotyping. The remaining 11 cases were false negative for Fya or Fyb on phenotyping while being positive on genotyping. In these 11 cases, 4 were false negative for Fya and 7 were false negative for Fyb on phenotyping. These discrepancies were more evident in patients who have had last transfusion less than one month ago.

Conclusion:
For the patients having multiple transfusions the results of phenotype have high discrepancy rate. Therefore, preference should be given to genotyping in such patients for selection of RCC to ensure safe transfusion.

Conflict of Interest:
None

Keywords:
chronic renal failure, Duffy blood group, genotyping phenotyping

Category:
Challenges in Transfusion Medicine

PP-28

Genotypic characteristics of Kidd blood group in patients of Beta-Thalassemia Major

Dr. Zainab Maeen ur Rashid

Objective:
To compare the phenotypic and genotypic frequencies of Kidd blood group system in multiply transfused ß-Thalassemia Major patients.

Methods:
This cross-sectional study comprised of sixty individuals. It was done from January to December 2021 at Armed Forces Institute of Transfusion (AFIT). Known cases of ß-Thalassemia Major were included in this study. Phenotyping was performed by haemagglutination technique. Commercially available antisera (Bio-Rad®, USA) was used. DNA extraction was done by 5% Chelex method. Amplification was done by conventional PCR. Polyacrylamide gel electrophoresis (PAGE) was used for amplified products. SPSS version 23 was used for statistical analysis.

Results:
Mean age of the study participants was 15.2±6.5. There were 58.3% males and 41.7% females in the study population. Most patients receive blood transfusions with two week intervals. The most frequent phenotype of Kidd blood group system was 35% Jk (a+b+), followed by Jk (a+b-), Jk (a-b+) which are 33.3% and 25% respectively. A rare phenotype Jk (a-b-) was found in 6.7% patients. JK*A/JK*B genotype was present in 68.3% cases whereas, 18.3% showed JK*A/JK*A and 13.3% had JK*B/JK*B genotypes. Discrepancies were found between results of phenotyping and genotyping in thirty-one cases.

Conclusion:
This study concludes that phenotyping does not give accurate results in multiply transfused patients of Thalassemia Major. Hence, genotyping should be considered as gold standard method for accurate identification of Kidd blood group system in such patients.

Conflict of Interest:
None

Keywords:
Beta-Thalassemia Major, Genotyping, Kidd blood group, phenotyping

Category:
Challenges in Transfusion Medicine

PP-29

Experimental Preparation of Antibody red cell screening panel (3x cell) at Armed Forces Institute of Transfusion Rawalpindi

Dr. Khadija Bano

Objective:
To prepare and validate indigenous low cost Antibody red cell screening panel (3x cell)

Methods:
Indigenous Antibody red cell screening panel (3xcell) was prepared at Armed Forces Institute of Transfusion (AFIT) by utilizing Red cells obtained from volunteer donors having Blood groups R1R1, R2R2 and rr. The cells were preserved in cell stab solution (Bio-Rad™ USA). The validation was done with known control cells (Bio- Rad™ USA). The analysis was done by SPSS version

Results:
to follow

Conclusion:
to follow

Conflict of Interest:
none

Keywords:
Red cell panel, low cost

Category:
Challenges in Transfusion Medicine

PP-30

Hemoglobin d Iran; a benign differential of raised hemoglobin a 2 on HPLC

Dr. Nada Sikander

Objective:

Hemoglobin D Iran, a sub variant of Hb D is frequently misdiagnosed as Hb E. Hb D Iran co elutes with Hb A2 and Hb E on HPLC. Hb D Iran is asymptomatic and only mildly symptomatic in compound heterozygous state with beta thalassemia. Whereas Hb E is thalassemic with clinical implications ranging from moderate to severe especially if it exists in compound heterozygous state with beta thalassaemia. Therefore misdiagnosing it as Hb E results in unnecessary invasive investigations like CVS for prenatal diagnosis and genetic counselling and extended family screening which may otherwise be necessary.

The objective of our study was to highlight that Hb D Iran although rare, does exist in our part of the world. Hematological parameters of heterozygous Hb D Iran and compound heterozygous β/Hb D Iran were also compared.

Methods:

A descriptive study was carried out on 52,379 subjects which were part of thalassemia extended family cascade screening from 36 districts of Punjab from October 2019-March 2021. Subjects with thalassemic red cell indices were subjected to HPLC and those yielding Hb A2 fraction of >8% on were run on capillary zone electrophoresis. Resulting Hb D Iran cases were confirmed by ARMS-PCR (Amplification refractory mutation system-polymerase chain reaction).

Results:

Forty cases of Hb D Iran were detected out of initially suspected 126 Hb E cases. This cases were mostly asymptomatic. Diagnosis was confirmed by molecular analysis. Statistical significance was found between RBC count, MCV, MCH, Hb F and diagnosis of "heterozygous Hb D Iran" and "compound heterozygous for β/ Hb D Iran".

Conclusion:

Hb D Iran can be easily misdiagnosed as Hb E as due to financial constraints only one screening method is employed. This maybe a reason why Hb D Iran remains unreported in our region. CBC and HPLC indices can also be suggestive if a case is of heterozygous D Iran or compound heterozygous β/Hb D Iran.

Conflict of Interest:

The authors declare no conflict of interest

Keywords:
Hb D Iran, Hb E, High performance liquid chromatography, Capillary zone electrophoresis, ARMS-PCR

Category:
Red Cell Disorders

PP-31

Genotypic frequencies of Kell blood group system antigens among healthy blood donors

Dr. Natasha Khattak

Objective:
To determine frequency of Kell blood group system antigens by genotyping in healthy blood donors.

Methods:
A descriptive cross-sectional study was carried out at Armed Forces Institute of Transfusion over a period of one year (Jan to Dec 2021). One hundred and seventeen blood donors were recruited for study. Non probability consecutive sampling was done. Three ml of peripheral venous blood was taken. DNA extraction was done by 5% Chelex method. Amplification was done through conventional PCR. Polyacrylamide gel electrophoresis (PAGE) was used for amplified products. SPSS version 23 was used for statistical analysis.

Results:
To follow

Conclusion:
To follow

Conflict of Interest:
None

Keywords:
Genotyping, Kell blood group system, PCR

Category:
Challenges in Transfusion Medicine

PP-33

Demographics of blood donors at a regional transfusion centre

Dr. Sobia Umar

Introduction:
Pakistan is facing considerable shortage of voluntary blood donors. Voluntary blood donors are the vital source of providing safe blood to transfusion centers. A lot of factors influence the unpaid voluntary blood donations. Understanding the demographics of blood donors is essential for identifying the donors, guiding donor recruitment and retention strategies

Objective:
To collect demographic data of blood donors for formulation of strategies to improve voluntary blood donations.

Methods:
A prospective descriptive study was conducted at Armed Forces Institute of transfusion (AFIT) over a period of one month from 6th November to 6th December 2021. Blood donors who were willing to take part in the study were included after taking informed consent. Demographic data of donors were collected using pre designed proforma. It included age, gender, ethnic origin, caste, literacy level, salary, blood donation status and type of donation (directed vs voluntary). Frequency, percentage and *mean ± SD* was calculated using SPSS 23. Blood donors during the study period were grouped into different literacy groups and their association with first time/ regular donors as well as voluntary/directed donors was sought using chi square test.

Results:
Mean age of blood donors presenting to AFIT was 28.53 ± 7.25 years. Out of 1000 blood donors 988 (98.8%) were male and 12 (1.2%) were female. Majority of blood donations were given by Punjabi (72.4%). Amongst different caste system in Pakistan highest number of donors were Rajput (9.3%). Majority of the blood donors had education up to Secondary School Certificate/Higher Secondary School Certificate (SSC/HSC) (75.6%). Seventy eight percent had salary between Rs 16,000 to Rs 50,000. Majority of the donors presenting at AFIT were directed (93.6%) donors giving donation for the first time (65%). Frequency of blood donation was correlated directly with level of education. Highest number of regular donors (50.4%) had literacy level up to graduation and beyond with p value of 0.001. Likewise, voluntary donations were prevalent in graduates and above 10.6% with p valve of 0.49.

Conclusion:
This study showed literate individuals are frequent voluntary donors.

Conflict of Interest:
None

Keywords:
Voluntary blood donors, Demographic data

Category:
Challenges in Transfusion Medicine

PP-34

Lupus anticoagulant testing by DRVVT among diagnosed patients of thromboembolism recurrent abortions and its association with clinical presentation.

Dr Mehreen Khalid

Objective:
The objective of this study is to establish a basis of starting early thromboprophylaxis after screening tests and reducing the risk of successive thromboembolic events.

Methods:
It is cross sectional study carried out at Hematology department of Armed Forces Institute of Pathology, Rawalpindi, Pakistan.LA testing has been performed by using dilute Russel viper venom test (DRVVT) method on Sysmex CS1600. DRVVT bypass factor 7 of extrinsic pathway as well as contact and anti hemophilic factor of intrinsic pathway, thus directly activating factor 10. To perform this test, two reagents are used; LA1(simplified DRVV to screen for presence of LA) and LA2(phospholipid rich DRVV for specific correction of LA). Demographic details, clinical presentations and hematological parameters of patients were noted.

All patients with evident history of thrombotic events and recurrent abortions were included in the study. All patients on anticoagulant, pregnant patients and those with diagnosed coagulation factor deficiency were excluded from study.

Results:
A total number of 1206 patients of age between 19 and 63 years. Median age was 31 years and was seen predominantly in female patients. Out of 1206, 86(7.13%) were positive for lupus anticoagulant. Among them, 26(30.2%) presented with deep venous thrombosis(DVT), 16(18.6%) with arterial thrombosis, 16((18.6%) with pulmonary embolism and dural venous sinus thrombosis, 14(16.27%) with SLE and 12(13.95%) with recurrent abortions and 2(2.32%) with mucocutaneous bleeding.

Conclusion:

Most common presenting feature was DVT followed by pulmonary embolism, arterial thrombosis and recurrent abortions. DRVVT is a useful test for determining likelihood of recurrence of thromboembolic events in patients of young age. It is concluded that testing should be considered in patient <50 years of age with venous or arterial thromboembolism, and pregnancy complications.

Conflict of Interest:
None

Keywords:
Lupus, VTE, Thromboembolism

Category:
Platelet and Coagulation Disorders

PP-35

Geographical distribution of Beta Thalassemia in Pakistan: A single-center experience

Dr. Tuba Farhat

Objective:
The aim of this study is to document the regional/area wise distribution of beta Thalassaemia in Pakistan and to identifying these red zones would help us direct our meager resources.

Methods:
A retrospective audit was carried out at Shifa International Hospital Islamabad. Total number of patient tested for suspected hemoglobinopathy in this duration were 4810 from January 2018 to September 2021. Complete family history, clinical history and transfusion history was taken at the time of testing. The regional distribution of the patients were taken from medical records. Hemoglobin studies was done through High Performance Liquid Chromatography (HPLC).

Results:
Total number of HPLC were 4810 out of whom 242 were included in our studies. There were 50.4% males and 49.6% females. Among these patients 80 were thalassaemia major, 02 Thalassaemia Intermedia and 160 Thalassaemia minor. The red zone areas for Thalassaemia major and minor was Bannu district followed by Bunner.

Conclusion:
Maximum of the cases of hemoglobinopathy were from Bannu followed by Bunner and Quetta. Due to lack of awareness and consanguinity the frequency remains high.This also

leads to increase mortality due to unsafe blood transfusion resulting in infections including hepatitis B and Hepatitis C and complication of iron overload resulting in heart failure,liver failure,endocrinopathies,bone diseases and alloimmunizzation along with transfusion reactions.

Conflict of Interest:
None

Keywords:
Beta thalassaemia, Haemoglobinopathies, Ineffective eythropoiesis

Category:
Red Cell Disorders

PP-37

Megakaryocytic attribution in patients with thrombocytopenia

Dr. Shahzad Ali Jiskani

Objective:
This research was carried out in order to understand megakaryocytic alterations and their contribution to the diagnosis of thrombocytopenia cases.

Methods:
This was a cross-sectional analysis of all consecutive cases of thrombocytopenia aspirates of the bone marrow over a span of one year (January 2019 to December 2019) at tertiary care hospital. With a 100X lens, megakaryocyte morphology was studied. Analyzed data was entered with SPSS version 21.0.0. Descriptive statistics were charted, and Chi-square tests were conducted to find some correlation at 95 percent Confidence Interval for inferential statistics.

Results:
Among the 91 subjects, the most common cause of thrombocytopenia was idiopathic thrombocytopenia (37.36%). The common morphological changes in megakaryocytes were hypolobated megakaryocytes and bare megakaryocyte nuclei. Odds of increased megakaryocyte counts in idiopathic thrombocytopenia were found to be higher than for other causes of thrombocytopenia and statistically important was the existence of bare megakaryocytic nuclei in idiopathic thrombocytopenia. ($P < 0.05$).

Conclusion:
Many similarities among various haematological diseases were observed in megakaryocytic morphology. However, in megakaryocytic thrombocytopenia, increased

megakaryocyte counts and the presence of bare megakaryocytic nuclei and hypolobic types were important.

Conflict of Interest:
None

Keywords:

Megakaryocytes, thrombocytopenia, dysmegakaryocytopoiesis, bone marrow biopsy, platelets

Category:
Platelet and Coagulation Disorders

PP-39

Association of ABO blood group with diabetes mellitus among pediatric patients

Dr. Nimra Javiad

Objective:
To determine the association of ABO blood group with diabetes mellitus among pediatric patients

Methods:
This research will be conducted at university of child health sciences, Children hospital Lahore. Total 50 diagnosed diabetic patients will be recruited. ABO blood grouping will be done by both forward and reverse grouping.

Results:
Result shows diabetes mellitus is more prevalent in patients having blood group B and less in patients having blood group A and O.

Conclusion:
This study has concluded that ABO blood group has association with diabetes mellitus and blood group A and O has negetive association with diabetes mellitus and people with blood group have more chances of having diabetes mellitus

Conflict of Interest:
No conflict of interest.

Keywords:
Diabetes mellitus, ABO blood group

Category: Challenges in Transfusion Medicine

PP-41

Prognostic significance of CD45 expression in childhood vs Adult Acute lymphoblastic leukemia

Dr. Hira Babar

Objective:
The purpose of this study is to establish a comparison between the presence of cytoplasmic CD 45 expression and its prognosis in children and adult ALL patients.

Methods:
It was a prospective study conducted in Haematology department of KEMU from may 2019 to may 2020 . A total of 82 patients were included in the study. Patients with any other clonal disorder, those with BCR ABL, JAK2 or MPL expression and children with congenital bone marrow disorder were excluded from the study. Cytoplasmic expression of CD 45 marker was seen in the trephine biopsy slide stained for the antibody. The results were recorded and patients were followed up for period of 1 year.

Results:
The patients were divided in 2 groups, more than 12 years of age and less than 12 years. Of the 40 (48.7%) patients included in first group CD 45 expression taken up by leukemic cells was seen in 22 patients. The 1 year survival of this group was 36%. In the second group 19 out of 42 patients had CD 45 expression showing survival of 42.12% Negative correlation of 1 year survival and prognosis was seen with CD 45 expression in both age groups.

Conclusion:
Cd 45 expression can be a novel prognostic marker in the patients of ALL. It should be included in routine investigation of the patients. This will help to predict the disease outcome and to make better decision in terms of patient outcome.

Conflict of Interest:
None to declare

Keywords:
Acute lymphoblastic leukemia, Cd 45, prognosis

Category:
Acute Leukaemia and Myeloproliferative Disorders

PP-43

Therapeutic plasma exchange as an emerging modality in neurologic disorders- An experience in Paediatric population

Dr. Neelam Mazhar

Objective:
To evaluate TPE as primary therapy or as a first-line adjunct to other initial therapies in neurological disorders as mentioned by American Society for Apheresis (ASFA).

Methods:
An interventional study was carried out to see the efficacy of therapeutic plasma exchange in patients with neurological disorders in paediatric population. It was carried out in collaboration with Department of Hematology, Medical intensive care unit and Neurology at the children's hospital and institute of child health Lahore. . Five procedures were carried out. TPE was performed on every alternate day using a double lumen femoral or jugular catheter. FRESENIUS KABI apheresis machine (Manufacturer Bad Homburg, Germany) was used to perform the procedure. Patient's total blood volume to be replaced was calculated as per Nadler's formula.

Results:
In our study, 121 procedures were done on 24 patients, from January 2020 till July 2021. Mean age of study population was 7.84 ±3.6yrs (range = 2 years to 14 years) 54% were males while 46% were females. Mean weight was 24.6 ±11.2kg. Mean hospital stay was 41.4 ±14.8days.Most patients in which plasmapheresis were done had GBS (62.6%).Five sessions of plasmapheresis were done on 41.7% (n=10) patients followed by improvement in power. Four patients had refractory symptoms for which 10 sessions of plasmapheresis were done. Among them, 2 patients had AMAN, one with CIDP and one patient with NMOSD. Six patients had improvement with 4 sessions, while 3 sessions were carried out on 16.7% (n=4), for whom we had to hold plasmapheresis due to infection/sepsis. There were 5 patients with NMOSD, all of them were given IVMP as first line with no improvement. One patient was given 5 courses of rituximab as well with no improvement. Five sessions of plasmapheresis were done on all except one patient in whom 10 sessions were done. There was slight to no improvement in power in all these patients. One patient had vision issue (only light perception initially - due to optic neuritis, with no loss of power of limbs), followed by improvement of vision to face recognition and fix and follow at 3 feet after plasmapheresis sessions.Chi-square test was applied to see improvement in statistical terms. Both GMFCS score (pre and post plasmapheresis) and MRCS score (pre and post plasmapheresis) were statistically significant (p=0.05), (p=0.05) respectively. There was no procedure related mortality.

Conclusion:
In sumTherapeutic plasma exchange may have a faster benefit in long term and short term therapeutic effects. TPE may in turn reduce hospitalization time, drug needs, and possibly short-term morbidity and should therefore be considered as an available treatment. TPE may even be considered for earlier use, but additional studies are required to determine the best treatment strategy for critically ill patients with progressive and life threatening neurological disorders.

Conflict of Interest:
no conflict of interest

Keywords:
therapeutic plasma exchange, neurological disorders, paediatric population

Category:
Challenges in Transfusion Medicine

PP-44

Alloimmunization and Autoimmunization in Multi-Transfused Thalassemic Patients: A single Center Experience

Dr. Mehak Mariyam

Objective:
Autoantibodies and allo-antibodies can cause hyper-hemolysis with rise in transfusion requirement. Our Objective was to determine the frequency of alloimmunization and autoimmunization in multi-transfused thalassemic patients.

Methods:
This was a cross sectional study conducted by non-probable consecutive sampling in one year duration from Sep 2020 to Aug 2021 at Hematology & Transfusion Medicine department of CH, UCHS. Age, gender, blood group, time since diagnosis of thalassemia, frequency of transfusion and DAT, IAT and Antibody screening was done. Data was stratified for effect modifiers and chi square test was applied with $p<0.05$ to test significant.

Results:
Among all multi-transfused beta thalassemia patients, male 56 (62%) and female 34 (38%); mean age of 6.04 + 3.3 years (7 months to 14 years). Antibody screening and allo-antibodies were positive in 4.4% (n= 4) cases each (anti-E in 2, anti-C in 2, anti-K and anti-e in 1 each) and auto-antibodies in 6.7% (n=6) cases. Splenomegaly was found in 71% patients, 50% of which were <5 years. 95.6% had history of first transfusion before 2 years of age. All patients positive on DAT and 66.7% (4 of 6) patient's positive on IAT and screening were diagnosed before age of 2 years.

Conclusion:
Extended matching and early detection and management of Auto and Allo-antibodies can help in the effectiveness of blood transfusion.

Conflict of Interest:
None

Keywords:
Autoantibodies, IAT, DAT, Coomb's test, Thalassemia, Allo-immunizationÃ¢â‚¬Æ'

Category:
Challenges in Transfusion Medicine

PP-45

Complications of Therapeutic Plasma Exchange in Paediatric Patients, A Tertiary Care Hospital Experience

Dr. Zaeem Adil

Objective:
TPE is considered as one of the treatment modalities that is used in systemic autoimmune diseases. Our Objective was to calculate the frequency of different complications of therapeutic plasma exchange in paediatric patients admitted in tertiary care hospital.

Methods:
It was a cross-sectional study and data was collected non-probability consecutive sampling of 100 patients during one year duration from Feb 2020 to Jan 2021 from the Medical ICU and Hematology & Transfusion Medicine department of CH, UCHS Lahore. All autoimmune disorders patients having indication for Therapeutic plasma exchange procedure and were included in this study. The collected data was entered and analyzed statistically by using SPSS version 25. Quantitative variables like age, weight was presented in the form of mean and standard deviation. Qualitative variables were presented in the form of frequency and percentage.

Results:
There were 65(65%) female and 35(35%) male. The mean age and weight was 6.3+3.2, 19.8+6.1 respectively. Out of 100, there were 51(51%) patients who had complications. Most common complication was hypotension in 24(47.1%) followed by Allergic reaction in 10 (19.6%), Tachycardia 9(17.6%), hypertension, hypocalcemia and febrile reactions were 2(3.9%) each, difficult IV cannula access and infection at cannula site were only 1 (2.0%) each. Ventilator dependency and hospital stay was not found to be related to the procedural related complications.

Conclusion:
Multidisciplinary approach and in ICU settings TPE can be performed safely and its a proven cost effective first line or adjunctive therapy of many autoimmune disorders

Conflict of Interest:
None

Keywords:
Therapeutic Plasma Exchange, Paediatric Patients, Complications.

Category:
Challenges in Transfusion Medicine

PP-47

Frequency of cyclin D1 in acute lymphoblastic leukemia patients

Dr. Quratulain Sabtain

Objective:
Acute lymphoblastic leukaemia (ALL) is a heterogeneous group of neoplasm characterized by aberrant clonal proliferation and accumulation of B or T lymphoid immature cells in hematopoietic tissues, which impairs the normal haematopoiesis. It is the most frequent malignancy that affects children worldwide. Cyclin D1 (CCND1) is an essential protein in the transition from G1 to S phase during cell cycle progression, which has an oncogenic potential and is highly expressed in several human malignancies.The aim of the study is to determine the frequency of cyclin D1 in acute lymphoblastic leukemia .

Methods:
The reterospective study done at the department of pathology LUMHS Civil Hospital Hyderabdad from January 2021 to June 2021.A total of 127 cases were diagnosed with acute lymphoblastic leukemia patients on peripheral blood smear, Sudan black B stain, bone marrow aspirate and biopsy, immunocytochemical study of cyclin D 1.

Results:
A total number of 100 cases were reviewed; cyclin D 1 frequency of scattered positive cases were 25(19.7%), and negative cases were 102(80.3%).

Conclusion:
So, cyclin D1 as a prognostic marker in the panel for detection of acute lymphoblastic leukemia, where advanced techniques like flow cytometry or immunophenotyping are not available. Its overexpression have a role in blast cell mobilization from bone marrow to lymph nodes.

Conflict of Interest:
There is no conflict of interest

Keywords:
All acute lymphoblastic leukemia, cyclin D1

Category:
Acute Leukaemia and Myeloproliferative Disorders

PP-48

Comparison of hematological and inflammatory markers to predict outcome in covid-19 in 1st and 4th wave

Dr. Hamzullah khan

Objective:
To compare the hematological and inflammatory markers values in 1st and 4th wave to predict outcome in COVID- 19 in a hospital based study.

Methods:
this comparative study was conducted in the department of hematology, Hayatabad Medical Complex Peshawar from April 2020 to 20th august 2021. 71 cases of wave 1st with known outcome were compared with 107 cases in 4th wave.

Results:
A total of 178 patients, 71 from (1st wave) and 107 from (4th wave) with known outcome were studied. The Mean age of patient in 1st wave was not significant different from patient admitted in 4th wave of covid-19 (p-0.571). A statistically significant difference exists between the groups (1st vs 4th wave) regarding hematological markers; neutrophil to lymphocyte ratio (NLR) (p=0.02), Absolute Neutrophilic count (ANC) (p=0.01) and platelet count (p=0.001). Similarly a significant difference exists between the groups (1st vs 4th wave) regarding; CRP (p=0.002) and D-dimer (p=0.001). During the 1st wave TLC and ANC were main prognostic hematological indicators to predict mortality/worst outcome in COVID-19 with a Area Under Curve (AUC) of 0.74 and 0.70. Likewise d-dimer was matchless prognostic inflammatory indicator to predict mortality with AUC of 0.73 IN 1st wave. In 4th was the AUC of the hematological markers (ANC, TLC and NLR) were nearly touching base line (0.5 to 0.54) while the AUC of d-dimer was 0.84 to predict mortality.

Conclusion:
TLC, ANC, NLR, low platelet count were worst prognostic hematological markers in COVID-19 in first wave while D-dimer and CRP were main prognostic inflammatory markers. Unlikely in 4th wave the prognostic values of hematological markers was merely significant. The d-dimer values in both the waves proved to be worth reliable to predict the severity and mortality in COVID-19.

Conflict of Interest:
NIL

Keywords:
COVID-19, hematological markers, Inflammatory makers, mortality

Category:
Challenges in Transfusion Medicine

PP-49

Performance evaluation of Fully Automated Reticulocyte count as a validated method in comparison with Manual counts in Neonates

Dr. Amna Aziz

Objective:
To evaluate the performance of fully automated Reticulocyte count as a validated method in comparison with Manual count in Neonates.

Methods:
100 healthy neonates of either gender were selected using non-probability convenience sampling. Venous blood of the participants was collected and reticulocyte count was determined using both manual count as well as Sysmex XN-3000™ Automated Haematology Analyzer. The data was recorded, tabulated and processed to ascertain the degree of correlation and agreement between the two methods using Linear Regression Analysis and Bland-Altman plot respectively.

Results:
The mean age of participants was days. Gender wise distribution was 53 males and 47 females. The mean manual reticulocyte count was 3.4 + 1.91 and automated reticulocyte count was 3.4 + 1.84. Linear regression analysis of the two sets of data showed good correlation with a coefficient of correlation (R2 value) of 0.99. Bland-Altman showed the mean bias of data was 0.01 with 95% values falling between upper and lower limits of agreement being considered good agreement.

Conclusion:
Our findings suggest that automated haematology analyzers can offer a high-throughput method of determining reticulocyte count with an adequately close agreement of results to the well-established manual method.

Conflict of Interest:
None

Keywords:
Reticulocyte count, Automation, Haematology analyzers.

Category: Red Cell Disorders

PP-50

Gaucher's Disease: Diagnosed in a child from bone marrow with massive splenomegaly

Dr. Samreen Khan

Objective:

Gaucher disease (G.D.) is an autosomal recessive lipid storage disorder. It is mostly seen in Ashkenazi Jewish population. It was first described in 1882 by Gaucher and in 1924 Epstein recognized the storage of glucocerebroside. It is characterized by deposition of glucocerebroside in cells of the macrophage-monocyte system due to deficiency of lysosomal hydrolase β-glucosidase. This disease usually involves spleen, liver bone marrow, nervous sysytem and lungs. It is divided into 3 subtypes based on presence and absence of neurological symptoms. Our case presents bone marrow of a patient with massive hepatosplenomegaly, cytopenias and other symptoms.

Methods:

A 2 year old boy from Afghanistan presented with loss of appetite, abdominal distension, weakness and delayed developmental milestones. He was born in Muslim family and and he was the first child with first degree consanguinity and according to parents he was normal at birth. His abdominal size was gradually increasing. He had multiple peripheral red blood cells transfusions. On examination he was pale with fever and had massive splenomegaly. Spleen was firm and non-tender. Few months back in Afghanistan he was treated for leishmania but no improvement was seen. Complete blood count showed life threatening anemia (6.5g/dl) with thrombocytopenia (86000 /μL) and low mean corpuscular volume (MCV). His bone marrow biopsy was done from local hospital which showed erythroid hyperplasia.

Results:

lood for peripheral blood and bone marrow trephine and aspirate was sent from Quetta and were reviewed. Peripheral film didn't show any signs of parasites. Bone marrow aspirate revealed a diluted specimen with many histiocyte-like cells having abundant, finely fibrillar, pale blue gray cytoplasm that is crinkled or wrinkled paper-like appearance. Few scattered histiocytes with haemophagocytosis are also identified. Trephine was an adequate variably cellular specimen and showed thick cartilagenous bone, few processing artifacts with adequate hemopoietic tissue. Section showed sheets of histiocyte-like cells the morphology of which was the same as aspirate. These cells were weakly positive for PAS and PAS-D stain, whereas positive for CD68 immunostain. Many scattered histiocytes were also noted. Later on leukocyte glucocerebrosidase enzyme activity was determined, which was 3 nmol/h/mg (Normal: >6 nmol/h/mg). Final diagnosis was Gaucher disease (type2).

Conclusion:
Storage disease shall also be considered in patients with long standing splenomegaly. Early enzyme therapy can decrease morbidity.

Conflict of Interest:
None

Keywords:
Gaucher disease, Hepatosplenomegaly, Erythroid hyperplasia.

Category:

PP-51

Acute myeloid leukemia transformed from Fanconi anemia in 26 year old female. A case report

Dr. Samreen Khan

Objective:

Fanconi anemia (FA) is an autosomal recessive disease which results in bone marrow failure and high predisposition to cancers. It is asscociated with chromosomal breakage, leukemias and other abnormalities. There is mutation in FANCA gene in FA, this gene is involved in DNA repair pathway. Fanconi anemia usually present in first and second decade of life and median age survival is 24 year old. The incidence and prevalence of FA is very rare in Pakistan.

Methods:

Here we report a 26 years old female who was brought to our hospital. She initially presented with progressive pallor, lethargy and pancytopenia. Apart from short stature she had polydactyly (supernumerary thumb). Bone marrow biopsy was done from other tertiary care center which showed aplastic anemia. Complete blood count showed haemoglobin 5.3 gm/dl, MCV 88.2 fl, MCH 32.9 pg, white blood cell count 2210 /µL, platelet count 1400 /µL and atypical cells: 02%. Reticulocyte count was 0.5%.

Results:

Bone marrow aspirate reveals a markedly hypocellular specimen with few atypical cells/ blasts seen. Granulopoiesis showed some maturation with few giant myelocytes and metamyelocytes seen. Bone marrow trephine biopsy revealed markedly hypocellular marrow with few cellular patchy areas having hemopoietic elements. Many scattered blasts were seen. On immunohistochemistry, these blasts are positive for CD34, CD117, MPO and TdT and comprised >20% of overall marrow cellularity. CD3 and PAX-5 are positive in scattered T and B-Lymphocytes. These findings were consistent with acute myelomonocytic leukemia. Bone marrow cytogenetics revealed 46, XX. Peripheral blood analysis for chromosomal breakage revealed 78% chromosomal breaks with triradial and quadradial formation. She received induction chemotherapy but expired.

Conclusion:

In AML secondary to FA advanced treatment modalities including sequential chemotherapy followed by HSCT would offer better survival advantage. Genetic studies should be done in all cases of fanconi anemia if possible.

Conflict of Interest:

None

Keywords:
Fanconi anemia(FA), Acute myeloid leukemia(AML), Haematopoietic stem cell transplant (HSCT).

Category:
Bone Marrow Failure Syndromes

PP-52

Identification & comparison of haematological indices & clinical correlates of flt3 mutation in AML and all

Dr. Aamir Ramzan

Objective:
To determine and compare the hematological indices and clinical correlates of FLT3 mutation in acute myelogenous leukemia and acute lymphoblastic leukemia.

Methods:
This descriptive analysis was carried out from January 2018 to December 2018 upon a sample of 94 newly diagnosed cases of acute leukemia (chosen via non-probability, consecutive sampling) presenting to the Dept. of Pathology – Liaquat University of Medical & Health Sciences, Jamshoro. Data obtained from laboratory records and patient interviews was recorded into a self-structured questionnaire after taking written informed consent. The data obtained was analyzed using SPSS v. 20.0.

Results:
The mean age of the sample stood at 41 years (±19 SD). 59.57% of the sample comprised of males while the remaining 40.43% were females. Among the total of 94 patients studied, polymerase chain reaction demonstrated FLT3 mutations in 6 (11.32%) of 53 AML patients and 2 (4.88%) of 41 ALL patients. Among the hematological and clinical findings most closely correlated with FLT3 mutation, WBC was the most statistically significant.

Conclusion:
After careful consideration, it can be concluded that no significant hematological correlates were identified, other than WBC count.

Conflict of Interest:
No any

Keywords:
Acute Myeloid Leukemia (AML), Acute Lymphoblastic Leukemia (ALL), Clinical Correlates, Hematological Indices & White Blood Cell Count.

Category:
Acute Leukaemia and Myeloproliferative Disorders

PP-53

Spectrum of haematological disorders in bone marrow biopsies at tertiary care hospital

Dr. Warda Iqbal

Objective:
The bone marrow Biopsy is considered an important diagnostic tool, for evaluation, staging and Monitoring of a diversity of various hematological and non-hematological disorders. The aim of this study was to determine the spectrum of various disorders diagnosed on bone marrow examination at tertiary care hospital Hyderabad.

Methods:
This was a retrospective study of bone marrow biopsies done on patients who were referred with suspected hematological disorders. Cases were analyzed in detail regarding clinical examination and other investigations.

Results:
Bone marrow of one hundred and Ten patients was included in the study. The age range from 3 months to 72 years with male and female ratio 1:1. The most common nonmalignant hematological disorder was found to be Aplastic Anemia i.e. 16(14.5%) Followed by megaloblastic anemia i.e. 13 (11.8%), idiopathic thrombocytopenic purpra ITP 8 (7.27%) cases, hypersplenism 7 (6.3 %), lysosomal storage disorder 2 (2.8%). Amongst the malignant hematological disorders, acute Myeloid leukemia accounted for 18 (16.3%) cases and was found to be the most common disorder, followed by Chronic myeloid leukemia 14 (12.7%), multiple myeloma 3 (2.7%), Follicular lymphoma 2 (1.8%). And 8 (7.27%) case for stagging purpose.

Conclusion:
In conclusion, the leukaemias were the most frequently encountered diagnosis followed by Aplastic Anemia, megaloblastic anaemia and ITP respectively. The other haematological disorders were less common.

Conflict of Interest:
Not Any

Keywords:
Non-malignant hematological disorders, malignant hematological disorder, bone marrow aspiration/biopsy, anemia, leukemia and lymphoma.

Category:
Bone Marrow Failure Syndromes

PP-56

Frequency of iron deficiency anemia in pediatric patients of chronic kidney disease on hemodialysis at children hospital Lahore

Dr. Sana Riaz

Objective:
Objective of study is to determine the frequency of iron deficiency anemia in pediatric patients of chronic kidney disease on hemodialysis at children hospital.

Methods:
Complete blood count was performed by sysmex to see the hemoglobin hematocrit levels and mean corpuscular volume by taking sample in lavender vail, and peripheral smears were made to see the anisocytes, target cell, hypochromic, and poikilocytes Serum iron was also performed by Beckman coulter AU 480 by sample in gel vial. only those patients were in included who were on hemodialysis. patients who were above the age of 15 were 3xcluded

Results:
The frequency of iron deficiency anemia in pediatric patients of chronic kidney disease was 36.9%.

Conclusion:
The study was concluded that frequency of iron deficiency anemia is 36.9 and in iron deficiency anemia, there was no significant role in relation to outcomes of lab tests for calcium, phosphorus, PTH or ferritin. Hemoglobin and hematocrit were significantly lower in iron deficiency and there was also low value for serum iron.

Conflict of Interest:
There is no conflict of interest

Keywords:
Iron deficiency, Hemoglobin, Hematocrit, mean corpuscular volume, chronic kidney disease

Category:
Red Cell Disorders

PP-57

Prevalence of anemia in HIV positive patients taking HAART

Dr. Durga devi

Objective:
To determine prevalence of anemia in HIV patients taking HAART

Methods:
The study was carried out in pathology department of LUMHS. 50 sample size, cross sectional study.6 months duration.

Inclusion criteria: HIV positive patients, willing to participate, all gender types included EXCLUSION criteria: patients who were taking other medicines than HAART.

pregnant women who were diagnosed with other hematological diseases.

Results:
The mean age of sample stood at 34 (SD +-5) years. the majority of sample comprised of middleaged individuals hailing from middle socioeconomic status and a rural background. Anemia was present in cumulative total of 85.8% of sample with most of individuals suffering from mild and moderate anemia and only few facing severe anemia. The severity of anemia was varied among different genders, age group and socioeconomic status.

Conclusion:
Anemia is global health problem among different genders age groups and socioeconomic status. we all have to solve it.

Conflict of Interest:
HIV positive patients with different types of anemia

Keywords:
HIV patients, anti-retroviral medicines, anemia.

Category:
Red Cell Disorders

PP-58

Frequency of direct antiglobulin test and indirect antiglobulin test in pediatric lymphomas at children hospital Lahore

Dr. Aamir Shahzad

Objective:
The objective of study was to determine the frequency of Direct Antiglobulin test and Indirect Antiglobulin test in pediatric lymphomas

Methods:
DAT and IAT were performed by Coombs test to see the antibodies in blood and serum. Complete blood count was performed by sysmex to note the value of hemoglobin, white blood cells and platelets and peripheral smears were made for retics count.LFT's was also done to see tha direct and indirect billirubin by Beckman coulter AU 480.clotted and hemolysed samples were excluded and pediatric patients of age below 15 years were included.

Results:
Out of 60 patients, FREQUENCY OF Direct Antiglobulin test and Indirect Antiglobulin test was found to be 23.3%.The mean hemoglobin value was 10.8gm/dl and significantly low mean hemoglobin was 8.3 in direct Antiglobulin positive test.

Conclusion:
The study was concluded that there is high incidence of direct positivity in pediatric lymphomas and direct positive test can be considered as marker for advanced clinical disease

Conflict of Interest:
There is no conflict of interest

Keywords:
Direct antiglobulin test.Indirect Antiglobulin test,Hemoglobin.white blood cells and platelets

Category:
Lymphoproliferative and Plasma Cell Dyscrasia

PP-59

Causes of donor deferral in single donor plateletpheresis

Dr. Amna Rani

Objective:
To determine the plateletpheresis donor deferral reasons for safe blood donation.

Methods:
Research was conducted at UCHS & CH Lahore. At least 33 donors were recruited and procedure was carried out using fresenius Kabi and Trima during the period of four months. Donors were selected after clinical history, CBC, screening and checked for proper venous access. All wiling donors fulfilling the criteria were included, and all unfit donors were excluded.

Results:
A total of 30 persons have applied for plateletpheresis. All were male. 22 donors (age group 21 to 30) were eligible for being plateletpheresis donors and 8 applications were deffered. Most common reason was poor venous access in two persons (25%) and other reasons were tattoo (12.5%), HCV positive (12.5%), low platelet count (12.5%), underweight (12.5%), fever (12.5%) and dizziness (12.5%).

Conclusion:
These causes are common in our society due to high rate of HCV and low platelet count is other common reason of deferral. These causes create problems for arranging platelet donors for single donor platelet procedure.

Conflict of Interest:
There is no conflict of interest.

Keywords:
Donor, plateletpheresis, transfusion

Category:
Challenges in Transfusion Medicine

PP-60

Knowledge of caregivers of thalassemia children

Dr. Amna Rani

Objective:
To assess knowledge of caregivers of thalassemia children.

Methods:
Conducted a cross-sectional observational study at thalassemia OPD LUMHS Jamshoro/ Hyderabad.

Results:
Of 200 caregivers of thalassemia children 63%showed good knowledge regarding thalassemia genetic etiology and about prenatal screening. Only 25%knew that hemoglobin electrophoresis is a diagnostic test of thalassemia, just 10-15 %has knowledge regarding thalassemia carrier stat and 10-12 %knew that consanguineous marriages lead to thalassemia. The knowledge of the caregivers regarding thalassem. The knowledge of caregivers of thalassemia patients was dependent on the sociodemographic determinants.

Conclusion:
Knowledge of caregivers of thalassemia regarding thalassemia was satisfactory however caregivers need health-oriented session regarding Hb elecophoresis and prenatal screening, carrier State And consenguious marriage in order to prevent the disease burden and also for the good compliance and further regular counselling of caregivers should be done to Enhance the safety and survival benefits of thalamic patients and to asses save blood transfusion.

Conflict of Interest:
No Any

Keywords:
Thalassemia, caregiver, counseling

Category:
Red Cell Disorders

PP-62

Blood Donor complications after whole blood donation

Dr. Asma Sattar

Objective:
The aim of this study was to find out the complications and their reasons in an otherwise healthy donor after whole blood donation.

Methods:
This study was conducted at University of child health sciences, blood bank of children hospital, Lahore. A total of 196 healthy donors were recruited. All blood donations were made by using 16- Guage needle by trained staff nurses, introduced into antecubital vein for donation of 500mL of blood was 50kg. Adverse reactions were divided into groups and all the data was entered on SPSS version 23 for analysis.

Results:
Total 196 whole blood donations were collected during the study period of 6 months. Out of 196, majority was of male donors (97.2%). The age distribution of the donors was 18-30 years (65.8%),31-40 years (24.2%) and 41- 55 years (10%). Total 25 adverse reactions were documented in 45 donors out of 196 such as fainting, sweating, low B. P, restlessness, vomiting, nausea, arm swelling, weakness, pallor skin, cold extremities, Low pulse etc. All adverse events were of mild intensity and no severe complications, medical emergency, or life threatening adverse reactions were observed.

Conclusion:
Adequate hydration, stringent screening if donors and comfortable environment reduce the frequency of adverse reactions. 5

Conflict of Interest:
No conflict of interest

Keywords:
Vasovagal reactions (VVRs), blood bank

Category:

PP-64

Correlation of haemoglobin,serum ferritin and red cell indices among pediatric anaemic patients

Dr. Javaria Ilyas

Objective:
To study correlation of red cell indices and haemoglobin level with one another and afterwards with serum ferritin for ascertaining the values of intercept and find out the slope among those having strong correlation.

Methods:
The cross-sectional study was conducted at University of Child Health Sciences Children Hospital Lahore. The study was comprised of randomly selected samples obtained from <14 years old children.The samples were processed by Sysmex- XN 1000 to analyse red cell indices and haemoglobin level and afterwards those samples diagnosed with anaemia were further processed by serum ferritin by using IMMULITE-2000 XPi.

Results:
There were 45 children of mean haemoglobin level 9.08 gm/dl.There was a strong positive correlation found between mean corpuscular volume and red cell distribution width, mean corpuscular volume and mean corpuscular haemoglobin. Moderate positive correlation was found between haemoglobin and mean corpuscular volume, mean corpuscular haemoglobin.strong negative correlation was found between serum ferritin and haemoglobin, mean corpuscular volume and mean corpuscular haemoglobin.

Conclusion:
There was strong to moderate correlation between different red cell indices and with haemoglobin but serum ferritin is the only variable which did not have any correlation with any other variable.

Conflict of Interest:
None to declare

Keywords:
Children, haemoglobin, serum ferritin, MCV

Category:
Red Cell Disorders

PP-65

Impact of donor cellularity on outcomes of allogeneic bone marrow transplantation

Dr. Memoona Khan

Objective:
To assess effect of donor bone marrow cellularity on outcomes of allogeneic HSCT.

Methods:
This is a prospective ongoing study carried out at AFBMTC/NIBMT from January 2020 to May 2021. We retrieved data from donors of all the patients undergoing HSCT using BMH in our set up irrespective of age, gender, disease, the type of conditioning regimen and transplant (Fully matched vs Haplo HSCT). Patients with autotransplant or PBSC as source of transplant were excluded. Consent was obtained from all donors to get bone marrow trephine at time of bone marrow harvest. Bone marrow was cellularity was determined by separate assessment by two experienced Haematopathologists. Primary outcome measures were time to achieve neutrophil and platelet engraftment where neutrophil engraftment was defined as the first day on which ANC > 500 cells/uL for at least 3 consecutive days and platelet engraftment was defined as the first day of achieving platelet count > 20,000/Ul for atleast 7 days without transfusion support. Secondary outcome measures assessed at 6 months were overall survival, disease free survival and GVHD(both acute and chronic).

Results:
Cellularity of 49 donors was assessed. Out of 49 transplant recipients, 24(48.9%) were of marrow failures,10(20.4%) were of malignancies and 15(30.6%) were of miscellaneous group (immunodeficiencies and beta thalassaemia major). Out of 24 donors, 8(33.3%) were hypocellular. Age of donors ranged from 4.5 years to 41 years with mean age of 20.6 years. 11 (22.4%) donors were normocellular while 38(77.5%) donors were found to be hypocellular for age. For normocellular donors, mean time to achieve neutrophil engraftment was 12.7 days post transplant while platelet engraftment was achieved on a mean of Day + 27.9 post HSCT. 6 months OS was 90.9% where 1 out of 11 transplant recipient died due to extensive Gut GVHD. 6 months DFS was also 90.9%. Out of 11 patients who received graft from normocellular donors, 2(18.1%) developed acute GVHD while 1(9.1%) developed chronic GVHD. Out of 38 patients who were transplanted from hypocellular donors, mean time to achieve neutrophil engraftment was Day +13 while mean time to achieve platelet engraftment was Day +25.3 .6 months OS was 97.3%. 1 patient died of Covid 19 post transplant. 6-month DFS was 94.7% where 1 patient of B ALL relapsed on Day +115 with loss of graft function. 4(10.5%) developed acute while 2(5.26%) developed chronic GVHD.

Conclusion:
Grafts from donors with hypocellular marrows do not adversely affect outcomes of allogeneic transplant as compared to grafts from normocellular donors.

Conflict of Interest:
Nil

Keywords:
Cellularity, Donor, Outcome, Transplant

Category:
Bone Marrow Transplant

PP-66

Factors affecting platelet yield in single donor plateletpheresis

Dr. Faryal Abid

Objective:
To determine the factors affecting platelet yield in single donor platlet pheresis

Methods:
Research was conducted at UCHS and CH Lahore. 40 donors were recruited and procedure was carried out using Fresenius kabi and Trima during the period of four months. Donors were selected after clinical history, CBC and checked for proper venous access. All willing donors fulfilling the criteria were included and all unfit donors were excluded.

Results:
A total of 25 person have applied for platelet pheresis. All were male with age group (20 -40). Twenty-three person (92%) with age group (20-30) have better platelet yield than two person (8%) with age group (31-40).

Conclusion:
Platelet yield correlated positively with predonation platelet count, weight, hemoglobin, processing time, and blood volume processed.

Conflict of Interest:
There is no conflicts of interest

Keywords:
Platelet pheresis, Haemoglobin, Total leukocyte count, Weight, Platelet count, Platelet yield

Category:
Platelet and Coagulation Disorders

PP-67

Impact of thalassemia major program on the lives of thalassemic patients

Dr. Khadija Ashraf

Objective:
To evaluate the impact of thalassemia awareness program in targeted families with beta thalassemia major

Methods:
retrospective pilot study

Results:
Awareness program was effective regarding improvement in safe blood transfusions (82%) ad reducing consanguinity by (69%)

Conclusion:
due to limited resources, cost ineffectiveness and lack of screening program at national level, people are still unable to protect their families

Conflict of Interest:
none

Category:
Red Cell Disorders

PP-68

Impact of thalassemia awareness program on the lives of thalassemic patients: A pilot study

Dr. Khadija Ashraf

Objective:
Aim of our study was to evaluate the impact of awareness in targeted families with history of beta thalassemia major in order to reduce the morbidity and mortality associated with complications of thalassemia and repeated blood transfusions.

Methods:
It was a retrospective pilot study conducted at Shifa International Hospital. The duration of study was from January 2019 to October 2021. The number of caregivers enrolled in our study was 65. During this time frame, baseline survey initially constituted of family screening, genetic counselling, role of consanguinity, safe blood transfusion and monitoring of transfusion related complications, afterwards a follow up survey was conducted to evaluate the impact of initial counselling.

Results:
Out of the 65 patients with beta thalassemia major, we were able to get a follow up with 45 families. Three of the patients expired due to complications related to iron overload or use of unsafe blood. Thalassemia awareness program was effective regarding improvement in safe blood transfusions (82%), the targeted families were well acquainted with screening of blood products that were being given to their kin and the program was able to reduce consanguinity (69%) in the extended family members.

Conclusion:
Due to limited resources, accessibility issues and lack of screening program at national level, people are unable to overcome the issues they face when their family members suffer from this life threatening disease. They are receptive towards counselling and modification. Non government organizations and societies have taken initiative by working under the umbrella of Pakistan Thalassemia Federation. National screening program should be started to address the issue with putting emphasis on screening before marriages in target families in areas with high incidence of hemoglobinopathy, screening at antenatal visit, Chorionic villous sampling in known families along with education of general population.

Conflict of Interest:
none

Keywords:
Thalassemia major

Category: Red Cell Disorders

PP-69

Audit of children with microcytic hypochromic anemia presenting for the diagnosis of beta thalassemia

Dr. Syeda Dua Fatima

Objective:
Identified abnormalities of haemoglobin synthesis include a myriad of disorders ranging from thalassemia syndromes to structurally abnormal haemoglobin variants. Beta thalassemia is the commonest preventable hemoglobinopathy of our region so its identification is immensely important epidemiologically and aid in the prevention of serious haemoglobin disorder. Therefore, we conducted this audit to identify the frequency of beta thalassemia major and trait among children presenting with microcytic hypochromic anaemia.

Methods:
Data was collected in retrospective manner in Hematology department of Children Hospital and University of Child Health Sciences, Lahore. Total 770 sample data was collected by non-probability technique and detailed history, CBC parameters and high-performance liquid chromatography HPLC results correlated for giving the final diagnosis. Samples of less than 6-month-old babies and those having received transfused in the last 3 months were not received

Results:
Out of the 770 samples 300(39%) were of females whereas 470(61%) were females. The mean age at sampling was 4.5 years and the mean Hb, MCV and MCH were 7.7mg/dl,61 fl and 21 pg respectively. Amongst them 300(39%) were labelled normal and advised iron studies,263(34%) diagnosed as thalassemia trait and family counseling was done. 169 (22%) diagnosed as thalassemia major and their genetic studies and family screening was advised,23(3%) showed other Hb like HbS, HbE, HbD and 15(2%) came out inconclusive. These results were given after correlation between history, Cbc indices and HPLC report.

Conclusion:
Our study showed higher frequency of normal individuals with probable iron deficiency and thalassemia trait and showing High performance liquid chromatography as an excellent diagnostic tool especially for traits so that family counseling can be done to save the future generations from this disorder. It also highlights the importance of doing iron studied before performing High performance liquid chromatography so that normal iron deficient children can be diagnosed beforehand.

Conflict of Interest:
None
Keywords:
Beta thalassemia major, thalassemia trait.

Category:
Red Cell Disorders

PP-70

Variation in prothorombin time and activated partial thromboplastin time under different storage conditions

Dr. Sidra Shabbir

Objective
Prothrombin time (PT) and activated partial thromboplastin time (APTT) are laboratory tests that help in the diagnosis of coagulation disorders and for following up anticoagulant therapy. New developments in laboratory services at our institute induced us to look into the transporting limitations for some tests, including PT and APTT. Though we performed tests according to NCCLS instructions for the collection of blood specimens, we noticed falsely raised PT and APTT values due to the different storage conditions. The objective of this study is to evaluate the effect of different conditions of storage for up to 24 hours on PT and APTT tests using plasma and whole blood samples.

Methods:
The study was conducted in children with age <16 years admitted to Children Hospital, Lahore.
Study Design: The study design was cross-sectional.
Setting: Department of Hematology and Transfusion Medicine, The Children Hospital & Institute of Child Health, Lahore.
Duration of Study: Four Months after approval of Synopsis.
Sampling Technique: Consecutive sampling. Sample size:
N=60
Inclusion Criteria:
- Children under 16 years.
- Both genders (male and female) were included
- Properly labeled sample in citrate vial (blue top) Exclusion Criteria
- Above 16 Year
- Unlabeled or mismatched samples
- Improperly collected samples
- Clotted samples
- Hemolyzed samples

- Lipemic samples

Sampling collection Procedure 60 samples were collected from Children Hospital, Lahore. Blood was drawn in the 3.2% sodium citrate via test procedure

- After the samples were drawn, the samples were centrifuged by which plasma separated.PT and APTT were measured using diagnostic STAGO.
- After measuring the normal (Baseline) results, samples were stored.

Samples were divided into two groups:

Group A: Whole blood & Group B: Separated Plasma

- Both groups were stored at Room Temperature (25 °C), in the incubator (37 °C), in Refrigerator (4 °C), and in Freezer (-20 °C) for 24 hours.
- Then PT and APTT were measured on STAGO and variation in results was observed.

Results:

We found that PT and APTT were clinically stable if the percent (%) value of change was within 5 %. Our data showed that PT results of plasma were stable for up to 24hrs at both 4 degrees C and -20 degrees C and vary at Room temperature and at 37 C degrees. PT results of whole blood were stable for up to 24 hrs at room temperature while at 4 degrees C, -20 C degrees, and 37C degrees results were deranged. On the other hand, APTT of plasma was deranged either at room temperature, 37 C degrees or at 4 degrees C while stable in freezing conditions. Remarkably, APTT Values of whole blood were deranged for all conditions up to 24 hrs.

Conclusion:

From this research, it was concluded temperature, storage time and the form of storage could not affect PT Test as compared to the APTT test which was easily affected by the storage conditions. For stable PT and APTT results, samples should be centrifuged and run instantly after collection. Both plasma and whole blood samples can be acceptable for PT testing up to 24 h and not for APTT testing, while transporting under different storage conditions. From this research, it was concluded temperature, storage time and the form of storage could not affect PT Test as compared to the APTT test which was easily affected by the storage conditions. For stable PT and APTT results, samples should be centrifuged and run instantly after collection. Both plasma and whole blood samples can be acceptable for PT testing up to 24 h and not for APTT testing, while transporting under different storage conditions.

Conflict of Interest:

none to declare

Keywords:

Coagulation Testing; Prothrombin time; Activated partial thromboplastin time; Stability; Storage; Pre-transport temperature requirements

Category:
Platelet and Coagulation Disorders

PP-71

Significance of platelet parameters as diagnostic markers of dengue fever

Dr. Iqra Tahir

Objective:
This is conducted to evaluate the roles of mean platelet volume, platelet distribution width and plateletcrit in the initial diagnosis of dengue fever. This simple test can provisionally diagnose the disease at very early stages, even before reduction in platelet counts.

Methods:
Study Design:
A retrospective study was of 100 patients was conducted admitted between September 2021 to November 2021 with clinical features suggesting dengue fever

Setting:
The study was conducted in Dengue ward of The Children Hospital Lahore

Duration of study:
Between September 2021 to November 2021

Sample Size:
100 patients admitted in the Dengue ward were studied

Sampling technique:
Simple random sampling technique was used to select patient with clinical features of dengue fever.

Sample selection:
Inclusion Criteria- All cases with clinical features suggesting dengue fever Exclusion Criteria- Cases with any previous chronic illness which may cause thrombocytopenia or any change in platelet parameters was excluded

Data collection procedure:
Blood samples of all the cases was collected in K3 EDTA tubes and the mean platelet volume was obtained using semi- automated Celtac-A hematology analyzer. The samples were processed within 1 hour of collection. Cases with platelet count less than 150,000/mm3 were confirmed with peripheral smear examination.

Control population comprising of 50 apparently healthy individuals with no underlying symptoms of dengue or pre- existing diseases capable of producing thrombocytopenia were included. Similar tests were carried out on the control group.

The serological tests for dengue NS1 antigen, IgG and IgM antibodies were carried out using Rapid Visual card test

Data analysis procedure:
Results were tabulated using the Microsoft Excel sheet and analysis was done using SPSS. The statistical significance was established using the student t test to ascertain the p value.

Results:
A total of 100 cases consisting of 59 males and 41 females with clinical features strongly indicating dengue fever were included in our study. 65 patients presented in febrile phase, 20 in critical phase and 15 in convalescence phase. Platelet count was below 150,000 in 70 cases and along with that Plateletcrit showed a decreasing trend in 71 cases respectively, when compared with the controls. MPV was initially raised in 39 patients when platelet count was normal (100,000 to 200,000) but as the platelet count decreased to very low levels (below 50,000), MPV also decreased as seen in 23 cases which is explained by bone marrow supression. PDW was markedly raised in 87 cases. NS-1 test was found to be positive in 82 patients and the rest of the 18 patients were tested for IgM, which was raised in 6 of them. It was also noted that PDW and MPV were raised in patients with NS-1 positive but normal or near to normal platelet count.

Conclusion:
MPV and PDW are specifically raised in patients at early stages of dengue fever. So they can be used in the initial diagnosis of the disease specially at times of endemic where antigen testing facilities are not available in large numbers

Conflict of Interest:
None to declare

Ethical Approval:
N/R or N/A

Keywords:
Platelet parameters, dengue fever

Category:
Platelet and Coagulation Disorders

PP-72

Variation in prothrombin time and activated partial thromboplastin time in healthy individuals of different ABO blood groups

Dr. Ayesha Khaliq

Objective:

Differences in blood groups have been linked with predisposition to some diseases. The effectiveness of the intrinsic and common coagulation pathways is measured by activated partial thromboplastin time, and the extrinsic and common coagulation pathways are assessed by the prothrombin time test.

The purpose of my study was to determine the ABO blood group-dependent variations in PT and APTT. With this new information, we made a data-directed decision about which blood type was more predisposed to thromboembolic diseases. So, It will allow us to implement preventive interventions for people with these blood groups and for counseling purposes.

Methods:

The research was conducted at the University of Child Health Sciences, Children Hospital Lahore, and a total of 178 healthy donors were recruited. The study design was cross-sectional and a consecutive sampling technique was applied. The study duration was of four months after the approval of synopsis. Donors of age greater than 18 years were included. Individuals having any bleeding disorders or sick were excluded. Hemolyzed samples were not analyzed. The venous blood sample was collected by venipuncture from the subjects aseptically; 4.5 ml was collected into 3.2% trisodium citrate vial. After the collection, samples were spun at 4000 rpm for 10 min and platelet-poor plasma was separated for PT and APTT analysis using the coagulation analyzer named STA compact by STAGO. While the 1.5 ml of whole blood was dispensed into EDTA vial for blood grouping by tube method. For the analysis of data, SPSS 23.0 was used

Results:

According to results, blood group O showed a slightly higher APTT value (43.24 ± 15.04 s) as compared to blood groups A, B, and AB ($P < 0.05$). Blood group A showed a significantly higher PT value (15.65 ± 2.53 s) compared to blood groups O, B, and AB ($P = 0.05$).

Conclusion:

The results of this investigation revealed that the levels of PT and APTT differed amongst blood types. Individuals with the O blood group have a tendency to bleed, whereas those with the non-O blood group have a tendency to thrombose.

Conflict of Interest:
There are no conflict of interest

Keywords:
ABO blood groups, Prothrombin time, Activated partial thromboplastin time

Category:
Platelet and Coagulation Disorders

PP-73

Outcome of philadelphia positive ALL; a single center study

Dr. Munazza Nabi Awan

Objective:
To study the outcome of Ph+ ALL in terms of overall survival and disease free survival in a tertiary care setting

Methods:
retrospective analysis of 35 patients who were treated at Armed Forces Bone Marrow Transplant Centre/ National Institute of Blood and Marrow Transplant (AFBMTC/NIBMT), Pakistan from 2003 till 2021 was carried out. All patients of both genders who presented at AFBMTC/NIBMT with Philadelphia positive ALL were included in this study

Results:
The final analysis included 35 patients. Median age was 33.25 years (1.5-65 years). Twenty-five patients (n = 25, 71%) were male and ten were females (n = 10 ,29%). Twenty-eight (n = 28 ,80%) patients were with denovo Ph + ALL and 7 (20%) out of 35 patients had CML transformed to ALL. First line chemotherapy included BFM (n=2, 6

%), Augmented BFM (n=6, 17 %), hyper CVAD (n=5, 14%), UKALL 2011(n=4, 12 %), UKALL 2014(n=2, 6 %), UKALL 2003(n= 5, 14 %), UKALL XII (n=4, 11 %) and others (n=7, 20 %). Twenty-six (n = 26 ,74 %) patients received tyrosine kinase inhibitor along with chemotherapy, 18 out of 26 (n=18 ,51%) received imatinib and 8 (n= 8, 23%) received nilotinib. Four (n= 4, 11.4 %) patients had primary refractory disease while and Eight (n=8, 22.8%) patients had disease relapse. Thirteen (n= 13, 37 %) patients underwent bone marrow transplant majority of the patients (n=11, 85%) were taken to transplant in CR1, 2 patients were taken to transplant in CR2 (n=2, 15%). Twenty out of 35 (n= 20 ,57%) patients died. Eight of them had (n=8,23%) treatment related mortality. At a median follow up of 37 months overall survival was 42.8 % with a DFS of 33.8 % and TRM of 23%

Conclusion:
Ph positive ALL is associated with OS of 42.8 %, DFS of 33.8% and TRM of 23 %

Conflict of Interest:
nil

Keywords:
Philadelphia positive ALL, outcome

Category:
Acute Leukaemia and Myeloproliferative Disorders

PP-74

Haematological parameters in children diagnosed with diabetes mellitus

Dr. Ammara Sadaf

Objective:
The objective of this study was to determine the hematological parameter in diabetes mellitus children in comparison with healthy controls

Methods:
A research was conducted at UCHS and CH and a total of 114 participants (84 cases and 30 healthy control) were selected using systematic random sampling technique. Children of age 1-18 years diagnosed with Diabetes Mellitus were included. Children having hemolytic anemia and congenital heart disease were excluded. Hematological parameters and fasting blood glucose levels were done by using commercially available Sysmex XP-100 Haematology analyzer and Bechman coulter AU480.

Results:

There was a significant difference in haematological parameters Hb was significantly lower among children with diabetes in comparison with control groups. Hb (12.61 ± 0.75 g/dl vs 12.89 ± 0.64 g/dl, p=0.04), Total WBCs (6.59 ± 1.42 vs 5.56 ± 1.38), Absolute lymphocyte count (2.60 ± 0.70 vs 2.04 ± 0.63), Absolute neutrophil count (3.57 ± 1.46 vs 3.11 ± 1.04) increases significantly in diabetic patients compared with controls. Among platelet, indices mean platelet volume (10.4 ± 1.1 vs 9.9 ± 1.1 fl) were found to be significantly increased in diabetic patients.

Conclusion:
The study showed tatistically significant difference in some hematological parameters of diabetic patient compared to control. a significant probability of anemia was identified in diabetic patient. hematological indices could be useful indicator of vascular complications.

Conflict of Interest:
No

Keywords:
Diabetes Mellitus, hematological parameters, fasting blood glucose, anemia

Category: Red Cell Disorders

PP-75

Hypogonadism in multiply transfused beta- thalassemia syndrome patients

Dr. Humaira Khan

Objective:
To determine the frequency of hypogonadism in multi-transfused beta--thalassemia syndrome patients in Khyber Pakhtunkhwa.

Methods:
This cross sectional descriptive study included 97 patients, 55 males and 42 females aged 15 to 32 years, regularly transfused at Fatimid foundation Hayatabad Peshawar. Patients' data was recorded in questionnaires. Clinical characteristics relevant to growth and puberty were recorded. Serum Ferritin, FSH, LH, Testosterone and Estradiol assays were performed using Chemiluminescence (CLIA) technique. Data was analyzed by SPSS version 20. Means, standard deviation and frequencies were calculated for numerical variables.

Results:
Hypogonadism was seen in 40.2% of the whole population (56.4% in males and 19.04% in females). Amongst 42 females, 32 were above 16 years. 43.7% had primary amenorrhea while 12.5% had secondary amenorrhea, with an average age of menarche 16 ±2 years. Delayed puberty was observed in 54.7% of females and 83.6% of males.

Conclusion:
Delayed puberty and hypogonadism are obvious endocrinopathies showing higher frequencies in iron overloaded thalassemic patients of Khyber Pakhtunkhwa. In this study, frequency of hypogonadism was found more in males as compared to females. Regular endocrine evaluation and timely intervention can ensure sexual maturity and improved quality of life.

Conflict of Interest:
None To Declare

Advanced Study and Research Board

Keywords:
Beta Thalassemia Syndrome, Puberty, Hypogonadotropic Hypogonadism and Ferritin.

Category:
Red Cell Disorders

PP-76

The degree of blood safety of voluntary non-remunerated versus replacement blood donors; a multicenter study of the largest cohort of blood donors in Sindh and Punjab

Dr. Neelum Mansoor

Objective:
Voluntary non-remunerated blood donors (VNRBD) recognized as being crucial for the safety and sustainability of national blood supplies. Systems based on replacement donors (RD) poses high risk of transfusion transmissible infections (TTIs). Currently, only 10-13% of people donate blood voluntarily in Pakistan. This fact underscores the need for continuous surveillance of TTIs. Indus hospital and health network (IHHN) has a widespread network of blood banks in two provinces, Sindh and Punjab. Evaluation of data from those centers is reflective of overall trends.

Methods:
Study conducted at The Indus Hospital, Karachi. Sites included; The Indus hospital blood centre Karachi, Lahore (Bedian), Multan, Bahawalpur, Muzaffargarh, Jamshoro, Hyderabad, and Thatta. A total of 591,820 blood donors included in the study from 1st October 2017 to 30th May 2021 and evaluated for type of donations and results of TTI testing, primarily performed on Architect i2000SR (Abbott).

Results:
A total of 477,938 (80.7%) RD and 113,882 (19.3%) VNRBD screened. Amongst these donors 53,590 (9.06%) were positive for TTIs. Of VNRBD, 53407(46.9%) new while 60475 (53.1%) were repeated donors. Co-infections observed in 2367 (5.1 %) RD while in 159(3.2%) VNRBD. Rate of TTI was variable at different sites, out of which RD versus VNRBD from Thatta (15.9% vs 6.7%), Jamshoro (12.9% vs 6.5%), Multan (10.1% vs 6.9%) and Bahawalpur (9.9% vs 5.3%) showed the highest frequency of TTIs (p-value 0.00).

Conclusion:
Study revealed significant prevalence of TTIs in RD. Proportion of voluntary donations is very low. Promotion of voluntary donations should be a unified goal of blood banks

working across the country. Switch to central blood transfusion service is the way forward.

Conflict of Interest:
None to declare.

Keywords:
Voluntary non-remunerated blood donors, Replacement blood donors, Transfusion-transmissible infections, Co- infections, Repeated donors

Category:
Challenges in Transfusion Medicine

PP-77

Childhood B-lymphoblastic leukemia: Integrating role of cytogenetics with induction outcome

Dr. Neelum Mansoor

Objective:
Cytogenetic is irrefutably one of the most imperative prognostic markers in acute leukemia. It is incorporated as an essential prognostic tool in major treatment protocols. Similarly, minimal residual disease (MRD) is of great clinical importance in the prediction of outcome in B-lymphoblastic leukemia (B-ALL). The primary objective of this study is to see the different cytogenetic aberrations in our patients, their association with risk factors and impact on induction outcome.

Methods:
This is a retrospective study conducted in Hematology department of The Indus Hospital, Karachi. All newly diagnosed patients of B-ALL (1-17 years) from 2nd Oct 2020 to 13th Oct 2021 were included. They were treated with modified Children Oncology Group (COG) protocol. Cytogenetic studies including karyotyping and fluorescence in situ hybridization (FISH) for BCR-ABL1, ETV6-RUNX1 and MLL gene rearrangement done on automated cell imaging system while MRD testing done by 8-color flowcytometry. Study aimed to determine association of cytogenetics with clinical risk factors and impact on post induction MRD outcome. Cases excluded in which karyotyping not done for any reason.

Results:
Among 238, cytogenetic abnormalities identified in 146 (61%) cases. Normal karyotype observed in 92 (39%), hyperdiploidy in 62 (26%), non-random structural abnormalities in 22 (9.2%), t(1:19) in 21 (8.8%), high ploidy in 13 (5.5%), t(9;22) in 12 (5.0%), complex karyotype in 10 (4.2%), 11q abnormalities in 5 (2.1%) and monosomy 7 in 1 (0.4%) cases.

FISH positivity for MLL, BCR-ABL1 and ETV6-RUNX1 observed in 6 (2.5%), 18 (7.6%) and 20 (8.4%) cases respectively. Cytogenetic abnormalities including t(9;22), complex karyotype and 11q were predominantly found in NCI HR cases which were 120 (51%) of total cohort. Post induction morphological remission seen in 98% cases. Translocations including 1;19 and 9;22, and 11q abnormalities were associated with high MRD positivity i-e. 68%, 73% and 80% respectively.

Conclusion:
Cytogenetic aberrations did not show any significant correlation with clinical features and post-induction MRD outcome which may be due to overall high MRD positivity in studied cohort. The discordance of MRD from western data can be explained by larger proportion of NCI high risk cases that is a common scenario of delayed diagnosis in low middle income countries.

Conflict of Interest:
None to declare.

Keywords:
Karyotyping, Acute leukemia, Cytogenetics, Minimal residual disease, Induction outcome

Category:
Acute Leukaemia and Myeloproliferative Disorders

PP-78

An audit of bone marrow biopsy procedure for a better diagnostic yield in a tertiary care hospital

Dr. Esha Farooq

Objective:
This bone marrow audit is done to observe the common clinical indications, procedural challenges, quality of the specimen acquired and diagnostic utility of the modality.

Methods:
This is retrospective audit conducted at the Indus hospital Health network. All patients underwent bone marrow biopsy either admitted in clinical wards or referred from outpatient clinics of adult age group (> 16 years of age) as per procedure protocol. Details of the patient, procedure and specimen were recorded in a predesigned form. An informed consent was taken from the patient/guardian at the time of procedure. Bone marrow biopsies were processed and reported as per department protocol. Appropriate marrow immunohistochemical and reticulin stains were used where necessary. Descriptive statistical analysis of the data was performed by using SPSS software (version 22.0, SPSS, Chicago, Illinois, USA)

Results:
A total of 114 bone marrow biopsies were performed and evaluated. There were 60 males and 54 females, male to female ratio was 1.1:1. The median (IQR) of the participants in the current study was 44.0 years (30.0-60.0) The commonest indication of bone marrow biopsy was for pancytopenia followed by Chronic Myeloproliferative Disorders and Pyrexia of unknown origin. In 71.2% of biopsies performed, diagnosis was established. Chronic Myeloid Leukemia was the most frequent hematological malignancy while Immune thrombocytopenic purpura was the most common benign hematological condition on bone marrow examination.

Conclusion:
Bone marrow biopsies which are of sufficient quality, permits a high diagnostic yield

Conflict of Interest:
None to declare

Keywords:
biopsy, immunohistochemistry, pancytopenia, Chronic myeloid leukemia

Category:
Acute Leukaemia and Myeloproliferative Disorders

PP-79

Prevalence of bone marrow lymphoma (hodgkin and non-hodgkin) in adult and pediatric population

Dr. Esha Farooq

Objective:
This study is done to assess the prevalence of Hodgkin (HL) and Non Hodgkin Lymphoma (NHL) based on age and gender.

Methods:
This was a retrospective study conducted at the The Indus Hospital Health Network from February 2019 to October 2021. The cases included were either Staging marrows (diagnosed by Histopathological biospy or flowcytometry) or diagnostic marrows. The cut-off value for age was 16 years (≤=Pediatric, >16 =Adults).

Results:
Out of total 64 patients, 54 were pediatric while 10 were adults. The male to female ratio was 3.9:1. The diagnosis of HL was present in 39.1%(n=18) while 60.9% (n=46) were of NHL. Out of 18 cases of HL, 77.8% cases were found to belong to paediatric males while in 46 cases of NHL, males were 80.4% while 87% was pediatric. In HL and NHL, CHL (77.8%) and High-grade B-cell NHL (39.1%) was most the common subtype both with pediatric male predominance respectively.

Conclusion:
Non-Hodgkin Lymphoma is more common than Hodgkin Lymphoma. It shows predominance of pediatric population with increased frequency in males.

Conflict of Interest:
None to declare

Keywords:
Lymphoma, Hodgkin, Non Hodgkin, Prevalence, Predominance

Category:
Lymphoproliferative and Plasma Cell Dyscrasia

PP-80

Factors affecting stem cell mobilization in patients undergoing auto hsct, a single center study

Dr. Irsa Hidayat

Objective:
Peripheral blood stem cell collection is an essential step in the process of Auto HSCT , and is sensitive to multiple factors. . A dose of at least 2 106/Kg/bw CD34+ HSC has been considered as the threshold to allow complete hematopoietic recovery. Multifactor analysis will led to predict mobilization failure and take prompt steps earlier or look for alternative therapeutic approach.

Methods:
This was a single center retrospective observational study involving a total of 104 patients of both genders who underwent mobilization attempts performed between January 1st, 2010 and July 31st, 2021 at Armed forces bone marrow transplant centre/ National institute of blood and marrow transplant (Afbmtc/Nibmt), Pakistan. A database containing performas were filled and data was analyzed respectively.

Results:
We retrospectively collected and analyzed 100 mobilization procedures performed for MM, Amyloidosis, Lymphomas and POEMS syndrome. In our sample, 14 out of 100 were Poor Mobilizers. Risk factors included: increasing age, diagnosis of NHL, positive bone marrow biopsy or cytopenias before mobilization, previous mobilization failure, prior multiple lines of chemotherapy, priming strategy with G-CSF alone, or without upfront Plerixafor

Conclusion:
Poor mobilization was associated with disease type, therapy with purine analogs and multiple chemotherapy regimens. The threshold of CD34+ cell count in PB identified poor mobilizers, in whom the administration of immediate or pre-emptive plerixafor could be useful to avoid a second mobilization.

Conflict of Interest:
no conflict of interest

Keywords:
Stem Cell Mobilization, Auto HSCT

Category:
Bone Marrow Transplant

PP-81

Outcome of Ph+ ALL; A single center study

Dr. Munazza Nabi Awan

Objective:
To document the outcome of Ph + ALL; a single center study

Methods:
A detailed retrospective analysis of 35 patients who were treatedat Armed Forces Bone Marrow Transplant Centre/ National Institute of Blood and Marrow Transplant (AFBMTC/NIBMT), Pakistan from 2003 till 2021 was carried out. All patients of both genders who presented at AFBMTC/NIBMT with Philadelphia positive ALL were included in this study.

Results:
The final analysis included 35 patients. Median age was 28 years (1.5-65 years). Twenty-five patients (n = 25, 71%) were male and ten were females (n = 10 ,29%). Twenty-eight (n = 28 ,80%) patients were with denovoPh + ALL and 7(20%) out of 35 patients had CML transformed to ALL. Sixteen (n= 16, 45.71 %) patients had high counts (>50 x 10 9 /L) at time of diagnosis. First line chemotherapy included BFM(n=2, 5.4 %), Augmented BFM(n=6, 16.2 %), hyper CVAD(n=5, 14%), UKALL 2011(n=4, 10.8 %), UKALL 2014(n=2, 5.4 %), UKALL 2003(n= 5, 13.5 %), UKALL XII(n=4, 10.8 %) and others(n=7, 20 %).Twenty six(n = 26 ,74 %) patients received tyrosine kinase inhibitor along with chemotherapy , 18 out of 26 (n=18 ,51%) received imatinib and 8 (n= 8, 22.8%) received nilotinib. Four (n= 4, 11.4 %) patients had primary refractory disease while and Eight (n=8, 22.8%) patients had disease relapse. Thirteen (n= 13, 37 %) patients underwent bone marrow transplant majority of the patients (n=11, 85%) were taken to transplant in CR1, 2 patients were taken to transplant in CR2 (n=2, 15%).Nineteen out of 35 (n= 19, 54.2%) patients died. Eight of them had (n=8, 22.8%) treatment related mortality. At a median follow up of 20 months overall survival was 47.1 % and DFS was 35.3 %.

Conclusion:
Ph positive ALL is associated with OS of 47.1 %, DFS of 35.3%

Conflict of Interest:
none

Keywords:
Ph+ ALL, DFS, OS.

Category:
Acute Leukaemia and Myeloproliferative Disorders

PP-82

Association of von willebrand factor with ABO blood group system

Dr. Hussnain Noor

Objective:
To evaluate the association of ABO blood group with Von Willebrand disease in children.

Methods:
The research was conducted at University of Child Health sciences,Children hospital Lahore. A total of 74 samples were investigated. Blood samples were collected in EDTA anticoagulated vial for forward and reverse blood grouping by tube method. 5 ml of blood was collected in 3.2% trisodium citrate vial. Spin samples at 4000 rpm for 10 minutes and performed von willebrand assay by using Stago- STA R MAX, Diagnostica Stago.

Results:
Out of 74 patients Von willebrand factor was raised in 'O' blood group patients as 77%,10% VWF was found in ' A' blood group,10% in 'B' group and 5% in 'AB' blood groups ($p< 0.001$)

Conclusion:
Mutimeric analysis indicate the rate of VWF proteolysis differed in different blood groups and was greater found in O blood group than for non.O blood groups in a rank order of O> A> B> AB.

Conflict of Interest:
None to declare

Keywords:
Von willebrand factor, ABO blood group

Category:
Platelet and Coagulation Disorders

PP-84

Clinical spectrum of polycythemia in a tertiary care setup: A single center study

Dr. Zunaira Aamir

Objective:
To determine the pattern, frequency and etiology of cases presenting with polycythemia in a tertiary care setup.

Methods:
This is a retrospective observational study, conducted at the Department of Hematology, the Indus Hospital and Health Network Karachi. The clinical and laboratory data of the patients diagnosed with polycythemia from October 2019 to July 2021, was analyzed.

Results:
A total of 33 patients were diagnosed with polycythemia in the studied duration out of which majority (82%) were males. Only 15% of the cases were diagnosed with Polycythemia vera while the rest were secondary erythrocytosis (85%). Of the identified cases of secondary polycythemia 46% were smokers, 39% were obese, four (14%) had high STOP BANG score on OSA screen and three (10%) had COPD. Seven (25%) patients had renal dysfunction and seven (25%) had hepatitis. Approximately 20 (71%) patients underwent venesection in secondary polycythemia while 8 (28%) were closely observed. All cases in primary polycythemia required cytoreduction with hydroxyurea along with venesections and low dose aspirin.

Conclusion:
Secondary erythrocytosis was more common in our study and the majority of these cases had a causal association with an underline systemic disorder.
Conflict of Interest:
None

Keywords:
Polycythemia vera, Secondary Erythrocytosis, Red cell disorder

Category:
Red Cell Disorders

PP-85

Implementation of a quality performance indicators in a new hematology analyzer-DxH 900 Coulter

Dr. Anila Aali

Objective:
Implementation of a quality performance indicators in a new hematology analyzer-DxH 900 Coulter.

Methods:
In this study between day precision was assessed by analyzing all three types of quality control samples during eight consecutive months. Mean ,standard deviation (SD) and coefficient of variation (CV),SDI and CVI were calculated for hemoglobin, WBC, and Platelet and compared with the other peer groups via IQAP program by Beckman coulter. As well as the daily result of Hb, WBC and Plt were also compared and P value was calculated to assess the precision and reliability of results generated by DxH Coulter. We didn't evaluate the within-€ œrun precision by analyzer in this study.

The analyzer was calibrated using stabilized calibration material from Beckman Coulter. Precision assay was performed according to CLSI-EP9 for clinical and laboratory studies.

Results:
Precision essays were performed according to CLSI-EP9 for Clinical and Laboratory studies. Between-day analysis compared three levels of quality control of different parameters runs 3 times a day. The measured parameters of DxH 900 coulter were discussed here .All parameters (Hb, WBC, Plt) are run in three shifts per day showed good precision >0.05.

In addition to this the QC results are also compared with the peer group on IQAP shows most of the parameters CVI and SDI is comparable with the peer group, indicate the high level of precision and accuracy in the analyzer result.

Conclusion:
In IQAP program comparison of Hb, WBC and Plt results show good precision and reproducibility of a hematology analyzer i.e DxH Coulter 900 thus it ensure that patient/clinician receive authentic and more reliable results for better diagnosis and management of disease.

Conflict of Interest:
None to declare.

Keywords: Standard deviation index(SDI), coefficient of variation index (CVI) IQAP, Precision

PP-86

Frequency of sickle cell hemoglobin in the samples received for high performance liquid chromatography received in a centralized laboratory

Dr. Hareem Alam

Objective:
The objective of this study was to estimate the frequency of sickle cell hemoglobin in samples received for High performance Liquid Chromatography (HPLC) at Aga Khan University Hospital, Karachi.

Methods:
After getting approval from the Aga Khan University Hospital Ethics Review Committee (AKUH-ERC), data was collected from samples received between the period 1st February 2020 to 31st January 2021. Data was collected according to a proforma, which included patient's age, gender, locality, CBC parameters and variants of sickle cell disease. These details were extracted from the hospital records using ILMS (Integrated Laboratory Management System) and PCI (Patient Care Inquiry). A separate grid was maintained to compile medical record numbers with serial number of the forms so as to avoid misuse of patient's information. Spss v 23 was used for analysis of the data.

Results:
The mean age of patients that were included in this study was 14.2 years ranging from 6 months to 59 years. The composition of males and females were 59.4% and 40.6% respectively. Majority of the samples that were received were from Balochistan(43%), followed by Sindh(32.1%), KPK(16%) and Punjab(8.9%). The hemogram showed mean hemoglobin of 8.6 ± 2.6 g/dl with lowest recorded as low as 2.4, while highest hemoglobin being 16.9. Out of total 295 samples received, sickle cell trait was found in 21.5% of the patients, sickle cell disease in 28%, sickle beta thalassemia in 31.1%, compound heterozygote for HbS and HbD in 4.4%, while 15% were post transfusion samples.

Conclusion:
Study showed the Sickle beta Thalassemia and Sickle cell Disease as the most common variant of Sickle Cell Anemia. It was found to be more frequent in Balochistan in our study. Large scale multicenter study is recommended for better estimation of the disease prevelance and its demographic distribution within Pakistan so that population oriented programs can be initiated for family screenings and premarital testing.

Conflict of Interest:
None

Keywords:
sickle cell hemoglobin, High performance liquid chromatography,

Category:
Red Cell Disorders

PP-87

Studying immunophenotypic modulation at different time points of chemotherapy; A walk through the disease course in 203 pediatric B lymphoblastic leukemia cases; providing implications for MRD detection

Dr. Omer Javed

Objective:
The objective of this study is to study antigen modulation during the course of chemotherapy and analyze trends at different phases of treatment that may provide useful information for MRD analysis.

Methods:
We studied 203 diagnosed pediatric BALL patients from April 2018 to March 2020 who were MRD positive in bone marrow throughout the evaluation period to see immunophenotypic modulation (IM) in antigen expression of TdT, CD34, CD10, CD20, CD45, CD13, CD33 and CD66 at different phases of treatment. Using eight color Flowcytometry (BD FACS CANTO-II; DIVA software version 8.0.2), the IM was assessed by comparative analyses of the changes in the mean flourescence intensity (MFI) of leukemic and non-leukemic B cells with the help of statistical tests. A p-value of < 0.05 was considered as significant.

Results:
We studied 203 cases, with 123 (60.6%) males and 80(39.4%) females, their median (IQR) age was 5.0 years (3.0-8.0). We observed statistically significant changes in the MFI values of five CD markers expressed by the leukemic blasts: CD10, CD45, CD34, CD66, CD19, and TdT. Similar to leukemic cells, benign B cells showed statistically significant trends in CD19, CD45 and CD20.

Conclusion:
Immunophenotypic modulation occurred to different extents in all analyzed samples. Our results demonstrated variable trend of immunophenotypic changes for CD10, CD34, CD45, CD19 and TdT at different phases of chemotherapy in leukemic as well as non Ã¢â, ¬â€œ leukemic cells within the same samples. The MFI of the different antigens expressed by the leukemic blasts should be taken into consideration and cautiously analyzed for MRD detection.

Conflict of Interest:
None to declare.

Keywords:
Antigenic modulation, MRD, pediatric BALL.

Category:
Acute Leukaemia and Myeloproliferative Disorders

PP-88

Comparison of thrombomodulin, VWF and adamts13 levels between preeclampsia and normal pregnancy

Dr. Aisha Ahmad

Objective:
The present study was planned to determine and compare the levels of Thrombomodulin, vWF and ADAMTS13 in pregnant females with preeclampsia and normotensive pregnant females.

Methods:
A cross-sectional comparative study of 44 females with pre-eclampsia (age 26±5 years) and 44 normotensive pregnant females (age 25.5±6 years) of similar gestational week was designed. Plasma levels of Thrombomodulin and ADAMTS13 were measured using the ELISA technique and plasma levels of vWF were determined using a fully automated Stago instrument.

Results:
Current study results revealed that the median (IQR) thrombomodulin level of PE pregnant was significantly higher {1115 (949) pg/ml} than healthy pregnant females {836.5(635) pg/ml} (p value = 0.003). The median (IQR) ADAMTS13 levels were reduced in PE pregnant {240 (256) (ng/ml)} as compared to healthy pregnant females {260 (159) (ng/ml)} but the difference was not statistically significant (p value = 0.838). A significant difference of von Willebrand factor levels was observed between healthy pregnant (209.0±103.2%) and PE pregnant females {227.5(166) %} (p value = 0.038).

Conclusion:
As expected, females with pre-eclampsia had significantly higher levels of plasma vWF (p=0.038), Thrombomodulin (p=0.003) than normotensive females. ADAMTS13 levels in pre-eclamptic females were lower than normotensive females but the difference was not statistically significant (p=0.838).

Conflict of Interest:
None

Keywords:
Pre-eclampsia, Thrombomodulin, von Willebrand factor, ADAMTS13, Elisa

Category:
Platelet and Coagulation Disorders

PP-89

Lineage specific chimerism in patients with hematological malignancies: A single centre experience from Pakistan

Dr. Nadia Sial

Objective:
Primary objective of the study was to assess the frequency of complete donor chimerism (CDC) mixed donor chimerism (MDC) and graft failure in patients with hematological malignancies. Secondary objective was to assess the impact of day 30, day 60 and day 90 lineage specific donor chimerism on overall survival (OS) and disease free survival (DFS).

Methods:
Data of acute lymphoblastic leukemia (ALL), acute myeloid leukemia (AML) and myelodysplastic syndrome (MDS) patients during the period of January 2016 to Jun 2021, was collected retrospectively from patients' record at Armed Forces Bone Marrow Transplant Centre. Donor chimerism status was analyzed in whole blood/bone marrow using CD3+ cells and CD15+ cells at day 30, day 60 and day 90. Descriptive statistics and OS and DFS were performed on SPSS v23.

Results:
In this Study, patients of ALL, AML and MDS were 23 (46%), 14 (28%) and 13 (26%) respectively. 42(84%) received matched related donor transplant and 8 (16%) haplo-identical transplant. At time of last assessment frequency of CDC, MDC and graft failure was 09(18%), 40(80%) and 1(2%) respectively. Patients who had MDC in whole blood/bone marrow at day 30, 60 and 90 were 2 (4%), 4 (8%), 3 (6%). Patients with MDC in CD3+ cells; at day 30, 60 and 90 were 8 (16%), 7 (14%), 3 (6%). Patients who showed MDC in CD15+ cells; at day 30, 60 and 90 were 3 (6%), 3 (6%), 2 (4%). Frequency of acute GVHD, chronic GVHD was 20 (40%) and 30 (60%). In this cohort OS and DFS were 78%, 76% and 42% respectively. At day 90, OS and DFS in patients with MDC was 67%and 33%, while 89% and 88% in patients with CDC (p-values= 0.05 and 0.01).

Conclusion:
Lineage specific chimerism is useful investigation in patients with hematological malignancies to assess relapse risk in post-transplant patients. In our cohort, OS and DFS were superior in patients having CDC at day 90.

Conflict of Interest:
No

Ethical Approval:
Received

Keywords:
Lineage specific chimerism, GVHD, Relapse, Graft failure

Category:
Bone Marrow Transplant

PP-90

Cd9 expression as a prognostic marker and predictor of cytogenetics in pediatric BALL patients

Dr. Hamza Khan

Objective:
This study was conducted to evaluate the expression of CD9 by flow cytometry as a possible tool to predict the recurrent cytogenetic abnormalities (BCR-ABL, ETV6-RUNX1 fusion and MLL gene rearrangements) in pediatric BALL cases.

Methods:
A total of 85 BALL cases, diagnosed between May till September 2020, by flow cytometry either on peripheral blood or bone marrow were included. Data was obtained through online hospital portal HMIS (hospital management information system). CD9 expression and its MFI (mean fluorescence intensity) was retrieved by flow cytometer analyzer and software BD FACS Diva Canto II. Cytogenetic testing for three recurrent abnormalities were done; BCR-ABL, ETV6-RUNX1 fusion and MLL gene rearrangements by FISH.

Results:
We have observed significant association of CD9 expression with ETV6-RUNX1 gene fusion, while non-significant with BCR-ABL and MLL rearrangements. Best cut-off value of MFI for CD9 expression and ETV6-RUNX1 was 1787.50 MFI with the area under curve of 0.78, sensitivity (87.8%) and specificity (72.7 %.).

Conclusion:
Our study showed a significant inverse relationship between CD9 expression and ETV6-RUNX1 gene fusion.

Conflict of Interest:
None to declare.

Keywords:
CD9, BALL prognostic markers.

Category:
Acute Leukaemia and Myeloproliferative Disorders

PP-91

Cytogenetics, a complex and technically demanding assay; capacity building and maintenance of international high quality standards

Dr. Mahesh Kumar

Objective

Establishing conventional karyotyping as a complex technically demanding assay, requires a good training with continuous maintenance for the achievement of accurate and reliable results. This study focuses on the challenges of the assay initiation and highlights the areas need to be assessed in capacity building with maintenance of quality standards.

Methods:

Following pathologists training in well-established international setting, the major challenge was the initiation of this complex technique and capacity building to achieve the highest quality standards. The strategy to overcome the initiation challenges of this testing. i.e. lab infrastructure, establishing SOPs, optimization of the technique with validation for an accurate and reliable results, the staff and other faculty / pathologist training with development of competency tools as a continuous assessment and building of the skill set. The cases included in this study were from January, 2020 to October 2021 reviewed and reported by two pathologists at the cytogenetics department of the Indus Hospital and Health Network, Karachi, in collaboration with a CAP accredited US Laboratory for a comparative analysis to assess the reported results quality.

Results:

A total of 411 cases were performed and analyzed. One pathologist reported 337 (82%) and other 74 (18%). Out of 337 there were 166 (49%) normal cases and 171/337 (51%) abnormal cases, 49% of the abnormal cases (84/17) showed complex karyotypes, involving multiple numerical and structural chromosome abnormalities. The concordance rate for first pathologist was 96.8% with 3.2% discordance. The second pathologist reviewed 74 (18%) cases, 42 (57%) normal and 32 (43%) abnormal cases. 53% of the abnormal cases showed complex karyotypes (17/32), with overall discordance of 1/74 (1.3%).

Conclusion:

The low discordance rate by both the pathologists highlighted the successful capacity building and maintenance of the required standards necessary for such a complex technique to ensure a reliable and accurate reported result. Moreover, the prolonged international collaboration played a pivotal role in capacity building and accuracy assessment.

Conflict of Interest:
None to declare

Keywords:
Conventional Karyotyping, Capacity building, Hematological malignancies

Category:
Acute Leukaemia and Myeloproliferative Disorders

PP-92

Comparative analysis of interphase FISH and conventional cytogenetics to detect BCR- ABL translocation in Chronic Myeloid Leukemia (CML) and Acute Lymphoblastic Leukemia (B-ALL)

Dr. Sania Sahar

Objective:
To compare the signal patterns of dual color dual fusion BCR/ABL probe (D-FISH) in the fluorescence in situ hybridization with conventional cytogenetics for the detection of Chronic Myeloid Leukemia (CML) and Acute Lymphoblastic Leukemia (B-ALL), and to explore their diagnostic.

Methods:
The presence of BCR/ABL gene rearrangement was determined in all the patients suspected of CML and B-ALL using dual fusion fluorescence in situ hybridization (D-FISH) probes and conventional cytogenetics (chromosome banding analysis). A minimum of 200 nuclei per case scored for FISH. Conventional cytogenetics was performed on bone marrow samples, using established protocol with Geimsa and trypsin. 20 metaphases were analyzed for each case.

Results:
This study includes 35 samples from patients diagnosed with CML and 391 samples from patients diagnosed with B-ALL, from January 2020 to August 2021 at the Indus Hospital. Out of 35 CML, 31 showed a BCR/ABL rearrangement by FISH, 24 of these patients displayed the typical FISH signal pattern and 7 patients displayed an atypical FISH signal pattern. Results were compared with conventional cytogenetics. Out of 24 typical BCR/ABL rearrangement pattern, 22 were identified Philadelphia positive by conventional cytogenetics and out of 7 atypical BCR/ABL rearrangement FISH pattern 3 patients were identified positive. Out of 391 B-ALL Patients 32 were Philadelphia positive, in which 18 patients displayed the typical FISH signal pattern and 14 patients displayed an atypical FISH signal pattern. The results were compared with conventional cytogenetics. Out of the 18 patients with the typical FISH pattern, 14 showed a t(9;22) by

conventional cytogenetics and out of 14 patients with atypical FISH patterns, only 2 patients were identified positive for t(9;22) by routine cytogenetics. Most of the patient with atypical FISH pattern for BCR/ABL to detect by conventional cytogenetics due to cryptic rearrangements undetectable by routine cytogenetics due to the lower resolution.

Conclusion:

FISH is a reliable, accurate, and quick method for detecting BCR-ABL rearrangement, compared to conventional cytogenetics. Conventional cytogenetic helps in identifying the characteristic t (9;22) but cannot detect cryptic translocations or other rearrangements of the BCR/ABL. In conclusion, interphase FISH using a commercially available dual color, dual fusion BCR/ABL probe is a sensitive, specific, efficient and cost-effective way to establish the initial diagnosis of CML and B-ALL. It reveals submicroscopic abnormalities that are not detectable by conventional cytogenetics or morphological examination of blood or marrow.

Conflict of Interest:

None to declare

Keywords:

BCR-ABL re-arrangemet, CML, BALL, Conventional cytogenetics, Philadelphia chromosome

Category:

Acute Leukaemia and Myeloproliferative Disorders

PP-93

Assessment of Bleeding Score in Patients coming to Tertiary Care with Coagulation Factor Deficiency

Dr. Shiza Ashraf

Objective:
The objective of this study was to determine the diagnostic accuracy of ISTH-BAT as a screening tool in tertiary care setting for pediatric population being investigated for bleeding disorders taking factor assay as the gold standard for diagnosis of bleeding disorders.

Methods:
This study involved 138 children of both genders aged between 1-15 years presenting with suspicion of bleeding disorder. ISTH-BAT score was calculated for each child and bleeding disorder was predicted if it was ≥2. These children underwent factor assay and diagnosis of bleeding disorder was confirmed which was taken as gold standard and diagnostic performance of ISTH-BAT was calculated accordingly. A written informed consent was obtained from parents of every patient.

Results:
The mean age of the children was 10.1±4.7 years. There were 79 (57.2%) boys and 59 (42.8%) girls with a male to female ratio of 1.3:1. Bleeding disorder was predicted in 55 (39.9%) children on ISTH-BAT while factor assay confirmed bleeding disorder in 78 (56.5%) patients. When cross-tabulated diagnosis of bleeding disorder on ISTH- BAT with that of factor assay, there were 48 true positive, 7 false positive, 30 false negative and 53 true negative cases which yielded 61.54% sensitivity, 88.33% specificity, 73.19% accuracy, 87.27% positive predictive value and 63.86% negative predictive value for ISTH-BAT in predicting bleeding disorder in children keeping factor assay as gold standard. Similar results were achieved across various subgroups of children based on age and gender.

Conclusion:
In the present study, bleeding assessment tool (ISTH-BAT) was found to be a useful instrument in predicting bleeding disorder among suspected children with a sensitivity of 61.5% and specificity of 88.3% at a cut-off value of ≥2 which advocates its preferred use in the risk stratification of children presenting with bleeding symptoms so that timely diagnosis and appropriate management may improve the outcome of such cases in future pediatric practice.

Conflict of Interest:
none to declare

Keywords:
Mild Bleeding Disorders, Bleeding Assessment Tool, Diagnostics Accuracy

Category:
Platelet and Coagulation Disorders

PP-94

Frequency and causes of thrombocytopenia in pregnant females at a tertiary care Hospital

Dr. Bakhtawar Akbar

Objective:
To determine the frequency and causes of thrombocytopenia in pregnant females.

Methods:
Study setting was done at Pathology department Diagnostic and research Lab hyderabad. Study design was cross sectional study., the sample size stood to be n=242.All Patients coming in Gynae OPD/Ward for antenatal checkup were selected. All patients were subjected to investigate for Complete blood count on sysmex XN1000. Those with chronic liver disease, DIC, TTP, HUS, nutritional deficiency and drug induced thrombocytopenia were excluded. The result were put into performed Performa. All the data were entered in to SPSS 20.0 version.Post stratification, chi-square test were applied.

Results:
Out of total 242 pregnant females, thromocytopenia was prevalent in 8% (19/242) pregnant females. Of those females ,75% (14/19) females had gestational thrombocytopenia, 15% (3/19) females had Preeclampsia, 5% (1/19) females had HELLP syndrome and 5% (1/19) had ITP.

Conclusion:
The overall prevalence of thrombocytopenia in pregnancy is 8%. Thrombocytopenia is most pronounced in the third trimester, where the platelet count usually remains above 110Ãƒ â€" 109 /L and rarely goes as low as 70Ãƒ â€" 109 /l in otherwise healthy pregnant cases. By knowing the burden of this disease, strategy can be planned for the proper management and prevention of this disease.

Conflict of Interest:
None to declare.

Keywords:
Thrombocytopenia, pregnancy, causes of thrombocytopenia

Category:
Platelet and Coagulation Disorders

PP-95

Diagnostic Validity of Total Vitamin B12 and Holotranscobalamin in Patients of Megaloblastic Anaemia Taking Methylmalonic acid as Gold Standard

Dr. Noureen Tufail

Background of the study
Vitamin B12 insufficiency is frequent, and it's one of the leading causes of megaloblastic anaemia. Its deficiency results in a variety of neurological symptoms that can be irreversible. As a result, early detection is critical. Total serum vitamin B12 is insensitive and unspecific test that does not reflect recent changes in cobalamin status. There is evidence; however, that holotranscobalamin (holoTC), the metabolically active portion of vitamin B12, is a new diagnostic laboratory tool for early B12 deficiency that appears to be more specific than total B12.

Objectives:
The current study was designed to determine diagnostic validity of total vitamin B12 and Holotranscobalamin taking methylmalonic acid as gold standard in patients of megaloblastic anaemia.

Methods:
After inform consent, a total of 95 megaloblastic anemia patients were selected. The whole blood, serum, and urine samples were collected in EDTA vials, gel vials, and urine containers, respectively. The EDTA sample was used to determine the complete blood count and serum and urine samples were used to determine serum folic acid, cobalamin and holotranscobalmin levels, as well as MMA levels, using the manual Elisa technique. The 2x2 table was used to calculate the sensitivity, specificity, positive predictive value, and negative predictive value of Holo-TC and cobalamin.

Results:
The patients in this study were mostly between the ages of 20 and 70 years. Males made up 43 percent of the patients, while females accounted for 57 percent. Holotranscobalamine (holo-TC) showed a sensitivity of 98.9% and a specificity of 50.00%, with a PPV of 98.90% and an NPV of 50%. Vitamin B12 was shown to have a sensitivity of 63%, a specificity of 50%, a positive predictive value of 98.33% and a negative predictive value of 2.85%. Diagnostic accuracy of Holo-TC and vitamin B12 was found to be 97.8% and 63%, respectively.

Conclusion:
According to the current study results, HoloTC has a higher diagnostic accuracy than vitamin B12 and can be used as a main test in people who are suspected of having a vitamin B12 deficiency.

Conflict of Interest:
None

Keywords:
HoloTC (Holo Trans Cobalamin), Megaloblastic Ananemia, Methylmalonic acid, Elisa Technique

Category:
Red Cell Disorders

PP-96

Blood donation-related adverse reactions: a tertiary care experience from a developing country

Dr. Amir Ali

Objective:
Although infrequent, adverse reactions (AR) of variable severity occur during or after the blood donation which can have negative impact on donor health and retention. Therefore, a detailed analysis is aimed to estimate the frequency and type of AR in blood donors and categorizing them further into severe and non-severe reactions. This study will help in optimizing the blood donation experience and strengthening of donor vigilance system.

Methods:
This is a retrospective study conducted in the blood center of Indus Hospital and Health Network (IHHN). Total 76,860 whole blood donors were selected between May 2018 to October 2021. Both volunteer and replacement donors who have consented for blood donation were further evaluated according to a standardized selection criterion. This included compliance to health screening questionnaire, age group and physical examination for weight, body temperature, heart rate, blood pressure and hemoglobin level. Data was recorded for donor demographics as well as frequency, type and severity of adverse reactions. Chi-square test was applied to assess the difference in the prevalence of AR between different age groups, sex and type of donations. A p -value < 0.05 was considered significant.

Results:
Among 76,860 donors, frequency of male and female donors were 73,393 (95.5%) and 3466 (4.5%) respectively.

There were 70,222 (91%) voluntary and 40,402 (52.5%) repeat (>1-time) donors. According to age groups, 22,305 (29%) of donors were <23 years of age and 34,557 (45%) were between 23 to 32 years. Adverse events were reported in 911 (1.2%) of donors. Among these, 117 reactions were noted in female gender which is 13% (117/911) of total AR and 3.4% (117/3466) of total female donors. Similarly, 794 adverse events were reported in male donors, making it 87% of total AR and 1.1% of male gender. Almost half (425) of the reactions were reported in <23 years of donors that constitute 47% of total AR and 1.9% of total donors in that age group. The frequencies of AR in voluntary and exchange donors were almost same i-e. 1.2% and 1% respectively. Of total AR, nausea/vomiting (48%) and loss of consciousness (40%) were most frequently noted events in non-severe and severe categories, respectively.

Conclusion:
Overall low prevalence of adverse reactions reinforces the fact that blood donation is a safe process. However, finding of more incidences in young donors and female gender requires additional vigilance in pre-donation measures.

Conflict of Interest:
Nothing to declare

Keywords:
Adverse reaction, Blood donation, Voluntary donors

Category:
Challenges in Transfusion Medicine

PP-97

Effective budget utilization in a resource constrained setting for thalassemia screening ACA-A every small step in the right direction counts

Dr. Maliha Sumbul

Objective:
1. To effectively utilize budget using single-cost effective Thalassemia Screening Tool in a resource constrained setting.
2. To identify and treat Iron Deficiency Anemia, a potential confounder, prior to High Performance Liquid Chromatography saving significant resources for mass scale screening.

Methods:
Quasi-Experimental study, Three Thalassemia Camps in collaboration with Sindlab Diagnostics and JIBA International, at Karachi, during one year period. Total 497 children and adults, both genders, of a School, Technical Institute and Factory were included. Subjects with normal Complete Blood Count parameters by Fully Automated Haematology Analyzer were excluded. Oral iron therapy trial was given to 45 subjects with followup CBC after 8 weeks.

Results:
Total 497 subjects were inducted, both genders, with a mean age of 24.38±5.96 years. Subjects declared normal on CBC were 368, 129 (25.9%) selected for HPLC as per protocol. Out of 129, Haemoglobin Disorders 14.0%, Suspected Alpha Thalassemia 20.2% and Nutritional Deficiency 58.9% with 9% Normal subjects were detected. The Positive Predictive Value is 83% for the CBC tool used. Cases with nutritional deficiency anemia were excluded from calculations as these states hinders electrophoretic diagnostic efficacy. Three males and 42 females were given Iron Trial for eight weeks and retested for CBC, with (22) 48.8% complete improvement in indices, (18) 40% were unaffected and (5) 11% were deteriorated.

Conclusion:
The proposed CBC screening tool and Iron Therapy Trial depicts effective budget utilization and obviates subjects from expensive high Ã¢â, ¬â€œ performance liquid chromatography. The net benefit generated can be used to expand the screening programme.

Conflict of Interest:
None

Keywords:
Haemoglobin Disorders, Thalassemia Screening Tool, High - Performance Liquid Chromatography

Category:
Red Cell Disorders

PP-98

Culture failure in bone marrow aspirate samples is considered a quality indicator in routine Cytogenetics; a benchmark of <5% is considered normal

Dr. Ambareen Zehra

Objective:
The culture failure is a tool which can be utilized as a one of the quality indicator in cytogenetics laboratory to assess the standard practices not only for the timely culture processing but also for transportation conditions, technical skills, sample volume and adequate TLC. This study was conducted to observe the significance of transit time and sample cellularity in culture failure considering the sample volume and TLC.

Methods:
The study was conducted at the Cytogenetics department of IHHN from October 2020 to October 2021. A total of 406 samples were analyzed, depending on the cell count (1 - 2 million cells per culture). The samples were processed with 24 hours (6-8 hrs) from the time of collection. When there was no other possibility of getting a repeat sample, aged bone marrow aspirate samples (>24 hrs) were processed as per the clinicians request. Bone marrow aspirate samples were cultured without stimulation for 24 hours in 10 ml of RPMI media supplemented with 10 percent Fetal Bovine Serum, harvested, banded, and analyzed.

Results:
Out of 406 samples, 10 bone marrow samples 2.4% (10/406) failed to produce any metaphases or produced a very limited number of metaphases, subsequently a full Karyotype was not possible to produce. Out of these 10 samples, 50% (5/10) were cultured after 24 hrs due to delayed transportation, 30%(3/10) samples were with normal count yielded poor quality of metaphases due to an inherent sample issue and /or technical problem and 20%(2/10) samples had low volume with low TLC ranging from 1.0 -3.0 / uL. All cultures were processed according to the standard operating procedure without deviation. A high rate of culture failure was observed in samples older than 24 hours. Overall, this study including 406 samples shows that we are still within the benchmark (i.e 5%).

Conclusion:

Our study results indicated that sample viability decreases in specimens processed beyond 24hrs of the time of collection, yelding higher numbers of culture failure. Successful karyotyping can be achieved by processing bone marrow samples within 24 hours (as soon as possible) from the time of collection. Due to the valuable nature of the bone marrow sample and the logistical limitations, it is not possible to reject these samples. However, the culture failure increases as time passes. Ideally the sample should be processed within 24hrs of the time of collection to preserve cell viability. In addition, technical skills, sample quality including adequate volume and TLC should be monitored to get a good mitotic yield.

Conflict of Interest:

None to declare

Keywords:

Karyotyping quality indicator, bone marrow cytogenetics culture failure, hematological malignancies

Category:

Acute Leukaemia and Myeloproliferative Disorders

PP-99

Spectrum of sickle cell disorder at tertiary care hospital

Dr. Sara Shafi

Objective:
Sickle cell hemoglobinopathy is an inherited blood disorder caused by abnormal hemoglobin formation. The gene for sickle hemoglobin results in the substitution of valine for the glutamic acid normally present at the 6th position from the amino terminus of the beta hemoglobin chain. The clinical manifestations of sickle cell disease are diverse where any organ system may be affected. Due to variable disease severity, the affected individuals require regular health care.

The aim of the study was to find the spectrum of sickle cell disorder.

Methods:
This retrospective study was conducted at Diagnostic and Research Laboratory LUMHS Hyderabad from January 2019 to November 2021. Data was collected from diagnostic and research laboratories, of the patients who were screened for hemoglobinopathies from tertiary care civil hospital Hyderabad. Patients included in this study were both males and females, from all age groups, and a family history of sickle cell disorder or suspicion of hemoglobinopathy was recruited. patients other than sickle cell disorders were excluded from the study. The samples were collected in an EDTA tube, and a total of 10,426 cases were screened on the bio-rad-II variant high-performance liquid chromatography (HPLC) system for suspected sickle cell disorders.

Results:
A total of 10,426 cases was studied. Out of which only183 cases (1.7%) accounts for sickle cell disorder. Homozygous Sickle cell disease was the predominant among sickle cell hemoglobinopathies accounting for 91 (49.7%) cases, followed by sickle cell trait 58(31.6%) cases, sickle beta-thalassemia 25(13.6%), hemoglobin S/D trait 8 (4.3%).

Conclusion:
Our study demonstrates that 1.7% population of Sindh is suffering from sickle cell disorder. The level of hemoglobin S among individuals is gender and age-independent. Early diagnosis and treatment can improve survival and quality of life.

Conflict of Interest:
none.

Keywords:
#sickle cell disorder #hemoglobinopathy #red cell disorder

Category: Red Cell Disorders

PP-100

Evaluation of Blood Donor Deferral Reasons in South Punjab

Dr. Faiza Rafiq

Objective:
To find out rate and reasons of deferral among donors in south Punjab.

Methods:
This prospective study was conducted from Jan 2018 to Oct 2021 (46 Months) in Regional Blood Center Multan and Regional Blood Center Bahawalpur. All registered donors were selected by detailed interview and brief physical examination, donors either accepted or deferred permanent and temporarily. Descriptive Statistics used to determine percentage of deferral reasons.

Results:
Total 5,44,806 donors visited these facilities out of which 4,88,133 (89.61%) were replacement donors 56,594 (10.39%) were voluntary donors (non-Remunerated). Overall deferral was 37193 (13.51%). Temporary deferral was 66,616 (81.05%) and 15,575(18.95%) were deferred permanently. The most common reasons of deferral were low Hemoglobin 28,235 (33.30%), Not Feeling Well (Common Cold & Fever) 12,738 (15.02%), Sever Heart and Lungs Disease 5429 (6.40%), Pulse 3,465 (4.09%) and BP Diastolic 2,947 (3.48%).

Conclusion:
In our study major reasons for deferral were temporary so public awareness and donor counselling regarding deferral reasons should be carried out so that donor can be return back for donation along with strict donor collection criteria.

Conflict of Interest:
No

Keywords:
Donor Selection, Donor Deferral, South Punjab

Category:
Challenges in Transfusion Medicine

PP-101

Clinico-hematological parameters spectrum for the diagnosis of dengue infection at tertiary care hospital, Hyderabad.

Dr. Mehwish Imam Khushk

Objective:
Dengue infection patients are presented with acute febrile illness. Clinical presentations may mimic other infections. The serology for definite diagnosis is costly and inaccessible in many hospitals. the study helped to identify the clinical features and hematologic parameters from a complete blood count (CBC) which distinguishes dengue infection from other causes.

Methods:
A total of 50 patients' data was recruited as a retrospective study from a single center-civil hospital Hyderabad, All patients who presented with acute fever between October 2021 to November 2021 were included and their CBC parameters data was collected from diagnostic and research laboratory Hyderabad The diagnosis of dengue infection was confirmed by serology. The 25 control groups were patients who presented with acute febrile illness without localizing signs. Clinical data and CBC results were reviewed and compared. The data was processed in SPSS software version 16.0

Results:
Headache, nausea, loss of appetite, generalized weakness, fatigue, and bleeding diathesis were significant symptoms in dengue patients. There was some diversity in the CBC in the dengue patients compared to the control group. Moreover, this study also identified the day of fever which these parameters were statistically significant. The dengue group had higher hemoglobin and hematocrit from day 3 to day 10, lower white blood cell count from day 1 to day 10, lower platelet count from day 3 to day 10, higher atypical lymphocyte percentage on similar days, and furthermore, the neutrophil to lymphocyte percentage ratio of dengue group was raised on the first 5 days then reversed in the recovery phase of the illness.

Conclusion:
this study identified important clinical features and CBC parameters to differentiate dengue patients from other patients who had acute febrile illness from other cause. This identification could be done in local hospitals, especially in prevalent areas to give an accurate diagnosis, enabling further investigation to be tailored and treatment commenced earlier.

Conflict of Interest:
No conflict of interest.

Keywords:
dengue, CBC Parameters, febrile illness

Category:
Red Cell Disorders

PP-102

Correlation of mean platelet volume with hba1c in type 1 diabetes mellitus

Dr. Muhammad Umar Farooq

Objective:
To correlate mean platelet volume with HBA1c in Type 1 diabetes mellitus.

Methods:
The research was conducted at university of child health sciences children hospital Lahore. A total of 63 samples of type 1 diabetes mellitus were investigated by taking 5 ml of blood in EDTA vial for detecting mean platelet volume MPV by using Sysmex X- 100 analyzer. The samples to determine baseline HBA1c were taken during consultations.

Results:
Mean platelet volume MPV was positively correlated with HBA1c levels. Mean platelet volume and glucose levels were significantly higher in higher HBA1c subgroup > 6.5% than that in lower subgroup < 6.5% ($p< 0.01$). In the higher MPV subgroup >12 fl, the platelet HBA1c and glucose levels were significantly higher than that in lower subgroup < 12 fl ($p<0.01$).

Conclusion:
Mean platelet volume was positively correlated with HBA1c in type 1 diabetes mellitus patients which might provide potential new parameters to monitor glucose control.

Conflict of Interest:
None to declare

Keywords:
Mean platelet volume, glycylated haemoglobin, type 1 diabetes mellitus