News Letter
Jan - Mar 2006
Pakistan Society of Haematology

President Column

The last three decades have seen tremendous advancement in the field of diagnostic Haematology. Automation has taken over most of the routine diagnostic work in general Haematology, coagulation and transfusion laboratories. Cytogenetics and molecular biology are bringing us closer to the diagnosis and improving the management of patients. Haematology analyzers have the capabilities of giving us information on red cells, white cells & platelets, and many overworked laboratories rely solely on their printouts.

There is however, still a case for sharpening the skills of young hematologist on microscopy. Examination of the peripheral blood smear should still be taken as an integral part of reporting complete blood picture. Red cell morphology is best studied with the help of a well-made well stained blood smear, which is examined patiently and with concentration. There exists a possibility of missing grave disorders if red cell morphology is ignored. A case in point is the diagnosis of micro-angiopathic haemolytic anemias, especially thrombotic thrombocytopenic purpura, D.I.C & haemolytic uraemic syndrome. It also pays off to correlate the platelet count with platelet distribution on peripheral smear . The diagnosis of leukemias is seldom complete with morphological findings alone. The importance of blast cell immunophenotyping, cytogenetics and molecular genetics can not be denied. However given the limited resources most of the hematologists face, we still need to inculcate in our younger colleagues, the importance of blood and bone marrow smears and trephine sections, in conjunction with the clinical findings, over and again. Those who have access to immunohisto-chemistry will be more comfortably placed, but the rest of us should not give up the practice of examining the marrow under the microscope. We hope the reference centers will be available to most of us to confirm our findings and that an environment of care and share will be present.

I hope members will own the society and through PSH will reach out to each other. The temptation of "solo flights" will always be distracting us, but rest assured, we need each other to make our mark & to bring respectability to haematology at national and international level.

Prof. Khalid Zafar Hashmi, President PSH

Progress In Stem Cell Frontiers

Dr Tahir Shamsi

What is a Stem Cell?

Human life starts when a sperm combines with an ovum and forms a fertilised egg. This cell and its immediate descendents are called "totipotent stem cells" because they can give rise to every tissue in the body. During first 8 weeks of human life, embryonic stage, the embryo is made of specialised "embryonic stem cells" also called "pluripotent stem cells" that can form just about every cell except the placenta. Stem cells have the capacity to undergo an asymmetric division such that one of the two "daughter" cells retains the properties of the stem cell while the other begins to "differentiate" into a more specialized cell type Stem cells are thus central to normal human growth and development, and are also a potential source of new cells for the regeneration of diseased or damaged tissue.

What are Embryonic Stem Cells?

Human embryonic stem cells are derived from the inner cell mass of a blastocyst-stage embryo that has undergone cell division and development for about six days following fertilization. Embryonic stem cells have a number of distinctive properties. They can live essentially forever -- without forming tumours. They can take a hint. Their development is directed by subtle chemical cues that vary according to location and conditions in the body.

During foetal stage of human development, 9th – 40th week of pregnancy, different organs of the body are formed by the descendants of these embryonic stem cells that form the skin in your eyelids and the hair of your eyelashes, they form the muscle cells, heart muscle, brain cells, liver etc. At the end of pregnancy, the foetus comes out and start to grow as an infant. By this time embryonic stem cells become dormant in most of the organ system of the human body with few exception i.e. bone marrow stem cells, liver stem cells, skin stem cells and stem cells of the intestinal lining (mucosa). All such cells belong to adult stem cell category and become committed to perform only specific function.

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What is stem cell transplant?

Adult Haemopoietic Stem cells obtained from bone marrow or peripheral bood of an HLA identical donor or from the patient himself have been in use for the treatment of many congenital and acquired blood disorders like acute and chronic leukaemia, lymphoma, b-thalassaemia major and aplastic anaemia. This treatment commonly called bone marrow transplantation is the standard of care and is accepted as an established treatment modality. Now such stem cells can be obtained from human umbilical cord blood, bone marrow and peripheral blood of HLA identical or partial mismatched sibling or unrelated donors. National and international stem cell donor registries are in place which have information about millions of potential donors who can donate their stem cells should there be a need to save a life.

Scope of Regenerative Medicine:

Many different diseases are genetic in nature i.e. when one or both parents inherit abnormal genes to their children). Examples are b-thalassaemia major, muscular dystrophy, haemophilia, cystic fibrosis etc. Replacement of diseased stem cells with healthy stem cells can correct the disease. Similarly many diseases inflicted during life may result in permanent damage in the structure and / or function of a particular organ. Examples are blood cancer (leukaemia), aplastic anaemia, myocardial infarction (dead heart muscle), stroke, diabetes etc. Using one's own or a donor's stem cells may correct the defect / damage and restore body function.

With the advent of DNA technology in 1980's, adult stem cells have been grown in the laboratory using appropriate culture conditions and white blood cell stimulating factors. Initially this technique was used to get the optimum number of stem cells for bone marrow transplantation. The same technology enabled us to purify specific cell-type stimulating factors i.e. cardiac stem cells, brain cells, liver cells etc. The focus then shifted to use embryonic and adult stem cells to repair damaged tissues / diseased organs. Embryonic stem cells are pluripotent and can be directed to make any organ of the body under appropriate conditions. Adult stem cells are specialist cells which have the (genetic information) memory of most bodily structure and functions but can regain the properties of embryonic stem cells partially under normal physiological or pathological environment.

Using adult stem cells to repair damaged organ has been hampered by their limited capacity to re-differentiate into any other cell type. Haematopoietic stem cells obtained from bone marrow or peripheral blood are the most commonly used cells for this purpose because of the ease and quantity in which they can be obtained. They cant be transferred or implanted at the site of disease / damage in a particular organ. Using patients own stem cells abrogate the risk of rejection.

What is the medical potential of the two varieties of stem cells?

Advantages. Embryonic stem cells are: Immortal: One cell line could supply endless amounts of cells with carefully defined characteristics. Like an endless fountain, the cell line itself would remain intact. Flexible: They can make any body cell. Available: Human embryos remaining after in-vitro fertilization are routinely destroyed by fertility clinics.

Disadvantages. Embryonic stem cells are: Hard to control: They may pass through several intermediate stages before becoming the cell type needed to treat a particular disease; this process is controlled by complex chemical cues. Ethically controversial: Many who believe life begins at conception say that the informed consent by patient donors does not remove the ethical stigma of doing research on human embryos. Rejected by the immune system: The immune profile of the specialized cells would differ from that of the recipient. The problem might be overcome by creating cell lines with generalized compatibility, perhaps through genetic engineering.

Adult stem cells

Adult stem cells are partly specialized cells that descended from pluripotent, or embryonic, stem cells. Less "eager" to specialize than embryonic stem cells, they may linger in the adult body for decades, although they may become more scarce with age.

Advantages. Adult stem cells are: Immune to immune attack: If patients receive the products of their own stem cells, they will not mount an immune response. Available: Some types, like blood stem cells, are easy to find. Partly specialized: That reduces the amount of outside direction needed to create specialized cells. Flexible: Adult stem cells may form other tissue types. Last fall, scientists reported that skin and blood stem cells both produced cells that look like neurons -- in the lab.

Disadvantages. Adult stem cells are: Scarce: Not all types of adult stem cells have been found yet. Unavailable: They can be dangerous to extract Vanishing: They don't live as long as embryonic cells in culture. Rare: Adult stem cells are never very common, and grow more scarce as we age, when the cells might be needed most. Like the following problem, this is relevant for self-transplants of a patient's stem cells. Questionable quality: Genetic defects may occur after exposure to sunlight or toxins. Or the disease being treated may be present in the stem-cell genes.

Beyond replacing parts -- stem cell research has other theoretical advantages. For one thing, stable populations of

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human cells would be a boom to the pharmaceutical industry, which could test new drugs on real, live and fairly normal human cells. If the meds worked, they could be put through animal and finally human tests. Stem cells could increase the accuracy of early drug discovery tests while reducing costs and the need to use animals such as, well, guinea pigs... Second, knowing more about the change and specialization of cells could help in two diseases where such processes go awry -- birth defects and cancer. In birth defects, some cells fail to become their intended tissue type, while in cancer, cells revert to a less-specialized form and lose the usual inhibition on endless multiplication. By studying the sequence of genes that turn on and off during specialization, we could learn to control and treat these diseases.

Summary

Research and therapeutic potential of ES cells and adult stem cells are as follows: Stem cells appear to have great therapeutic potential for the treatment of many disorders that are both common and serious and for the repair of damaged tissue; until recently most research on stem cells has focused on ES cells from animals and the derivation of ES cell lines from them; cell lines from human ES cells have the potential to provide a basis for a wide range of therapies; to ensure maximum medical benefit it is necessary to keep both routes to therapy open at present since neither alone is likely to meet all therapeutic needs; Effective stem-cell based therapies would be a gradual process over the next five to twenty years. This is a normal time-span for the development of any new treatment. Future developments might eventually make further research on ES cells unnecessary. This is unlikely in the foreseeable future; in the meantime there is a strong scientific and medical case for continued research on human ES cells.

About International Society of Haematology

Objectives: International Society of Haematology(ISH) promotes international discussions and diffusion of information and ideas relating to Haematology.It provide a forum for such discussion and to encourage international collaboration in investigation of hematological problems. To encourage standardization of hematological methods and nomenclature. To represent the interests of Haematology shall include scientific principles , clinical and laboratory aspects of diagnosis and management of blood diseases and any other topics relating to the biology and pathology of blood forming tissue. As part of its functions the society shall , at intervals, organize scientific, educational, and business meetings to be called International Congress of Haematology. These will be held in an agreed rotations in the three divisions. The actual place will be determined by the Board of councilors of each division **ISH & PSH** ISH has three divisions, European-African division & Asia Pacific division (ADP). We are in Asia Pacific division. Unfortunately very few PSH members have taken up the membership of ISH. This is a useful membership as it keeps you posted with the activities of ISH and offers you opportunities to attend the ISH divisional meetings as well as the world congress. The 31st congress will be hosted by the Inter American division & will be held on 9-12 August 2006 in Puerto Rico and the 32nd world congress of ISH will be in 2008 in Bangkok. PSH has the opportunity to host the APD-ISH 10th congress in 2006. However we need to increase our membership of ISH and start work immediately. These meetings have a certain standard, which reflects on the capabilities of the host society. We will have to perform well and create a positive impression of PSH.

Membership Any person of good professional standing if medically or scientifically qualified or who is in other way eminent in the field of Haematology in any of its aspects shall be eligible. Ordinarily, candidates will have manifested a continuous interest of Haematology for a period of at least 5 years. Trainees with lesser experience may be reconsidered as applicants for membership.

For further information, membership forms/ annual fees/ terms and conditions contact Dr Nadir Ali: e mail: nmjrm@hotmail.com

For those who are already members are requested to clear annual dues as soon as possible

XXXIst World Congress of the International Society of Haematology

August 9-12, 2006- San Juan, Puerto Rico
Puerto Rico Convention Centre

Invitation

Dear Colleagues

The International society of Haematology(ISH) is pleased to invite you to the XXXIst ISH Congress being held August 9-12 2006 in San Juan, Puerto Rico. More than 2000 participants are expected, and we hope that you will join us in this unique scientific and cultural experience.

In addition to the outstanding scientific program, A state of the art exposition featuring exhibits from pharmaceutical companies, medical suppliers, clinical diagnostic and research based companies, publishers, and non profit organizations will be open to attendees. Visitors will be able to enjoy the culture and sights of San Juan and the surrounding area. Steeped in history, Puerto Rico offers visitors a distinctive cultural experience as well as the natural beauty of an island boasting 272 miles of beaches and lush tropical landscapes. The island's rich history, from its earliest Indian roots to Spanish colonial times, sets it apart from other Caribbean destinations and offers visitors unique sight seeing and cultural activities

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Scientific Program:

Presentations: Acute myeloblastic leukemia and chronic myeloproliferative syndromes, Tumor lysis syndrome, Chrnic lymphocytic leukemia, Adult and childhood acute lymphocytic leukemia, New applications for rituximab, Low grade lymphomas, Platelet disorders, Peripheral T cell and cutaneous T cell lymphomas, Infection prophylaxis and management of infections during induction chemotherapy in hematological malignancies, Bone marrow failure states: clinical features and management, Hodgkin's disease, Hematological manifestations of infectious disorders, Immunoglobulin therapy:Applications in Haematology, Benign and malignant monoclonal gammopathies, Thalassaemia and hemoglobinopathies, Chronic myeloid leukemia, Supportive care: Antiemetics, New insights into the etiology and management of anemia. Aggressive B cell lymphomas, ISH/ASH symposium: Cases of bleeding and clotting disorders, Recent result of clinical trials in hematologic malignancies at MD Anderson, Hypercoagulable states and thrombosis, Management of skeletal manifestations of hematological disorders, New anticoagulants and procoagulants, and Transfusion medicine.

Case discussions: Myeloproliferative disorders/MDS, Lymphoproliferative disorders, Multiple myeloma, Chronic lymphocytic leukemia, Bone marrow failure, Anemias, Pediatric Haematology, Infections in myelosupressed or immunosupressed patients, Platelet problems, Bone marrow transplantation, Thrombosis, Acute lymphoblastic leukemia, Unusual lymphoproliferative disorders

Further info and registrations: **www.ish2006.org**

About PSH

Pakistan Society of Haematology (PSH) is a non political, non – sectarian Govt registered organization consisting of hematologists of Pakistan. PSH promotes the advancement of Haematology including transfusion medicine, through encouragement of research, improvement of teaching & technical methods, organization of scientific meetings, publication of scientific material, and is affiliated with other National & International organizations. PSH also provides forum for the persons practicing Haematology and transfusion medicine to discuss problems and to formulate agreed view points at National and International forum.

Membership (1). Members: MBBS or equivalent plus post graduate qualification in Haematology/transfusion medicine and show evidence of active work in Haematology during the last three years including the period spent in training for post graduate examination in Haematology/transfusion medicine. (2). Associate members: Those who possess the prescribed for a member but not completed three years of active work in Haematology (3). Junior members: Registered students of post graduate training in Haematology/transfusion medicine for at least one year. (4). Corporate members: Those with MBBS qualification and have keen interest in Haematology, and become members on payment of Rs 500 per annum. They will not be eligible for vote or contest of any office. For Further info please e mail to: **nmjrm@hotmail.com**

Pakistan Society of Haematology 8th National Haematology Conference

Quetta Balochistan Pakistan April 28-30, 2006

Invitation: Pakistan Society of Haematology announces the 8th Annual National Haematology Conference at Quetta in April 2006.

It is a matter of great honour and immense pleasure for us to invite you at this conference which is scheduled to be held from 28-30th April 2006 at Quetta Serena Hotel. This event will be accompanied by pre conference work shop on examination of peripheral blood & bone marrow, and on anti coagulation on 27th April. An exciting excursion trip on 30th April has also been arranged. The theme of the conference will be "Heamatology in new millennium" The scientific program will contain the latest and most exciting developments in the scientific research of Haematology disorders. Symposium and concurrent sessions on specialized areas of Haematology will be presented throughout the program. Exhibits from pharmaceutical companies, medical suppliers, clinical diagnostic and research based companies, publishers, and non profit organizations will be open to attendees.

This is the first time that the city of Quetta is hosting the haematology conference. Your stay in Quetta shall not only provide you opportunity to share your views & experiences with other colleagues, you will also have chance to enjoy the best weather of Quetta and traditional food of Balochistan. We eagerly look forward to your participation in the conference.

For further information please contact Dr. Muhammad Luqman Butt. "The lab" opposite Civil Hospital Natha Singh Street, Quetta. Cell 03337805117 or please e mail to: **nmjrm@hotmail.com**

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