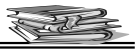
SUMMARY



SUMMARY

Haemopoiesis starts with a common pluripotent stem cell that can give rise to the separate cell lineages. The hematopoietic system is characterized by constant turnover of cells to maintain populations of leukocytes, platelets and erythrocytes. Stem cell has the ability of self renewal and differentiation which are regulated by growth factors, stromal cells of hematopoietic microenvironment and intracellular mechanisms.

Bone marrow transplantation involves eliminating and replacing an individuals bone marrow stem cells and all cells derived from them including the haemopoietic, lymphoid and histocyte / macrophage system by a healthy marrow grafts .

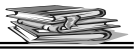
Bone marrow grafts are derived from syngeneic, allogeneic or autologus sources. The sources for stem cell for transplantation include bone marrow, peripheral blood, cord blood and fetal liver tissue.

The marrow grafts is obtained from the doner under general or spinal

anathesia via multiple needle punctures and aspiration from the posterior iliac-crests.

In autologus marrow transplantation, harvested marrow is purged for removal of tumour cells. The marrow is then reinfused intravenously into the recipient.

The principle phases of marrow transplantation include the preparation regimen, the marrow infusion (BMT) and management during the post transplant phase.



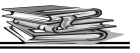
The purpose of the preparative regimen is to eradicate the neoplastic clone and to immunosuppress the recipient to allow permenant and functional marrow engraftment.

The discovery of circulating stem cells in the peripheral blood was observed by the rescue procedure with infusion of autologous or allogeneic leukocytes into lethally irradiated animals. The use of peripheral blood stem cell transplantation has expanded rapidly over the last decade. The lower number of circulating stem cells has led to the discovery of mobilization techniques by chemotherapy, growth factors or combinations of both to increase the number of stem cell in the peripheral blood, the collection of stem cells from peripheral blood is done by cell separators, These stem cells are then cryopreserved to be used later on for transplantation. The transplantation of peripheral stem cells has many advantages due to its rapid engrafment and the stem cells have antitumor effect to be less contaminated with clonogenic malignant cells.

Allogenic BMT has been used with increasing frequency for treatment of AML, ALL.

Young patients with CLL also have been successfully treated with intensive radio, chemotherapy and PBSCT. Allogeneic BMT is the only currently available curative therapy for CML.

Complications of bone marrow transplantation are numerous. They are divided into early and late complications. Infectious complications are frequent and include bacterial, fungal and viral Infections. Immunosuppression with break down of skin and mucosal barriers, neutropenia,decreased immunoglobin



production and impairment of cell mediated immunity are predisposing factors.

GVHD represents one of the major complications of allogeneic BMT. It is an immunologic reaction of donar T lymphocytes against recipient tissue. It may be acute or chronic.

Other complications include veno-occlusive disease, endocrine disorders, anaemia, hemostatic disorders, cataract, diarrhea, mucositis, pneumonitis. myasthenia gravis. recurrence of malignancies or development of new types.

Accelerating and enhancing the recovery of the immune system after SCT could reduce the risks of both infections and malignant disease recurrence.