

Immunodeficiency disease -

Page - 1

Stem cell deficiency Diseases - Entire humoral and cellular immunity revolves around antigen antibody interactions along with other immune components such as cytokines, complements, MHC molecules (HLA molecules) and tumor necrosis factors etc. The humoral wing consists of B cells, which contain surface antibodies. These antibodies after encounter with antigens cause B cells to transform into plasmocytes which secrete specific antibodies. The cellular immunity is mediated by T cells. The different lymphocytes and all other blood components originate from group of stem cells called Hematopoietic cells (HSCs) in bone marrow. HSCs are seeded from embryonic primordial precursors. HSCs contain stem cells for progenitor erythroid cells for differentiating into erythrocytes, blood cells (RBCs) and platelets. HSC also contain progenitor myeloid cells for giving rise to monocytes, eosinophils, neutrophils, basophils and mast cells. The lymphoid progenitor cells of HSCs differentiate into progenitors of B-cells and T cells. The severe congenital immunodeficiency defect is caused in the development of primordial B and T cells, neutrophils, B cells, and T cells do not develop causing reticular dysgenesis in which multiple infections occur in infants and the child dies soon.

B-cell deficiency disease - B cells play important role in providing immunity to host as they produce polyclonal antibodies such as IgG, IgM, IgA, IgD and IgE. All the B-cells are produced by bone marrow. The deficiency of B cells or defect in complete synthesis of 2 light and 2 heavy chains leads to various