it is thus the frist organ in all animal species to become predominantly lymphoid. In continues to grow till about the 12th year after puberty. it undergoes spontaneous progressive involution. Indicating that it functions best in early life

the thymus is located behind the upper part of the sternum. aberrant thymic tissues are afte found in neighboring sites . it has two lobes sorrounded by a flbrous capsule . septa arising from the capsule divide the gland into lobules which are differentiated into an outer cortex and an inner medulla . the cortex is crowed with actively proliferating , small lymphocytes . the medulla consistes mainly of epithelial cells and mature lymphocytes amidst which are Hassali's corpuscles. which are whorl like aggregations of apithelial cells.

Till recently , the thymus was an organ without any recognised function . the fortuitous abservations by GOOD (1954) of thymoma and impaired immunity in a patient , and by MILLER (1961) of immunodeficiency in neonatally thymectomised mice , paved the way for the understanding of the pivotal role of the organ in the developent of the cell mediated immunity, the primary function of the thymus is the production of the thymic lymohocytes. it is the major site for lymphocytes product , only about one percent leave the thymus . the rest are destroyed locally . the reason for this apparently wasteful process is not known in the thymus, the lymphocytes acquire new surface antigens (thy antigens). lymphocutes produced in the thymus are called thymus (T) dependent lymphocytes of T cells Unlike lymphocytes proliferation in the peripheral organs , in the thymus it is not dependent on antigen stimulation , in fact , peripheral antigenic stimult do not lead to any immune response in the thymus . antigen

introduced directly into the thymus may lead to a local immune response.

(Fig...) development of T and B-cell aysteme.

the thymus confers immunogical competence on the lymphocytes during their stay in the organ , prethymic lymphocytes are not immunocompletent , in the thymus they are educated so that they become capable of mounting cell mediated immune response the against appropriate antigens , this at least in part is effacted by hormone like factor produced by the thymus such as thymulin tymosin and thymopotein , the importnce of thymus in lymphocytes proliferation and development of CMI is evident from the lymphopenia deficient graft rejection and the so called runt disease seen in neonatally thymectomised mice. Deficient CMI is also seen in congential aplasta of the thymus in human being (DiGeorge syndrome) and in mice (nude mice).

T- lymphoid are selectively seeded into certain sites in the peripheral lymphatic tissues, being found in the white pulp of the spleen, around the central arierioles and in the paracortical areas of lymph nodes, these regions have been termed thymus dependent as they found grossly depleted after neonatal thymectomy , while thymectomy affects CMI primarily , it also diminishes antibody response to certain types of antigens (thymus dependent antigens) such as sheep erythrocytes and bovine serum albumin, Humoral response to other antigens is unaffected.

Bursa if fabricius:-

This is a lymphoepithelial organ arising as a pouch from the dorsal part of the cloaca in birds. its development , structure and function parallel those of the thymus. it originates from an epithelial anlage, become a lymphoid organ by about the 15th day of embryonation, developes full functional ability near hatching and starts involuting by 7-13 weeks of age. corresponding to the age of puberty , this bursa is also a site of lymphocytic proliferation and differentation , stem cells from the yolk sac. fetal liver and bone marrow enter the bursa, poliferate and develop into immunocomplenet 'bursal lymphocytes' or B-cell (B for Bursa or Bonal marrow). these migrate and seed selective areas in the peripheral lymphoid organ the mantle , the germinal follicles and perifollicular regions of the spleen, and the far cortical areas and medullary cords of lymph nodes , these are known as bursa dependent or tymus independent areas following appropriate antigenic stimulation , B-lymphocytes transform into plasma cells and secrete antibodies.

the vital role of the bursa in humeroal immunity was discovered accidently by glick and change(1956) when they found no antibody response to a bacterial antigen in chickens which has been bursectomised at hatching immunocompetence is conferred on the lymphocytes by the bursa in stage , competence for lgm production is acquired early (about the 14th day of embryonation) and for lgG late (about the 21st day synthesis lgM, but not lgG).