7. SUMMARY

Morphological and Morphometrical study of spleen

The study involved 70 foetuses which were grouped on the crown heel length (CHL), crown rump length (CRL), foot length (FL), and abdominal circumference (AC) findings. The shape of the spleen was studied as wedge shaped, triangular shaped, oval shaped, quadrangular shaped and dome shaped. 53% of the spleens were wedge shaped.

Accessory spleens were found in four specimens, two at the hilum of spleen and two near the stomach in the greater omentum.

The splenic length, breadth and thickness showed a gradual increase till 24th g.w. and remained stationary till 30th g.w. thereafter it gradually increased till 38th g.w.

The morphometric studies on the spleen weight and body weight showed a gradual increase with gestational age. The ratio between spleen and body weight was more or less constant throughout the gestational period.

The splenic volume increased with the advancing age.

Microscopic structure of spleen

The histological study revealed that by 10th to 12th g.w. the spleen was covered by a cellular capsule with fibroblast, fibrocytes and few collagen fibers. Irregular shape mescenchymal cells with large nuclei was scattered in the parenchyma.

By 13th to 14th g.w, few blood vessels with RBCs, few haematopoietic cells, and groups of lymphocytes were seen scattered diffusely.

By 16th to 17th g.w. reticular fibers supporting sinusoidal spaces were seen and spleen showed a rich vascularity.
By the 18th g.w. the lymphatic aggregation became more prominent around the arterioles and the surrounding vascularity increased. This marked the beginning of red and white pulp differentiation.

At the 20th g.w. periarteriolar lymphatic sheath (PALS) started forming. Reticular cells reduced in number and the capsule was thicker with trabeculae.

By the 23rd g.w. the spleen showed a distinct red pulp with RBCs and sinusoids and white pulp containing lymphoid follicles.

By the 26th to 28th g.w. the lymphocytic aggregation increased, trabeculae increased and the capsule had more collagen fibers.

At 30th g.w. the red and white pulps were distinctly seen and a marginal zone was distinguished.

By the 34th to 38th g.w. the splenic tissue appeared more like the adult spleen with distinct red and white pulp and thick fibrous capsule with numerous trabeculae.

The proportion of red pulp from 20th to 38th g.w. decreased from 77.8 to 62.2 and the proportion of white pulp increased from 22.2 to 37.8. This shows that the white pulp increased in the later stages of development as compared to the red pulp.

The haemopoietic cells were observed throughout the early stages up to the mid gestational period.

The reticular network became prominent by 14th g.w. and showed aggregation around sinusoids. In the later stages the reticular fibers were dense in the white pulp as compared to the red pulp.

**Immunohistochemical of Laminin, CD3 T-lymphocytes and CD20 B-lymphocytes**

Laminin an ECM protein was studied as it is known to stimulate epithelial morphogenesis.

The density of laminin was studied in the foetal spleen of various gestational ages.
Laminin stained positively for capsule, trabeculae, wall of the arterioles and sinuses in red and white pulp of the spleen.

The average amount of laminin in 14th and 38th gestational week was 67.8 % and 28.5 % respectively. The maximum density of laminin was 77 % seen at 16th gestational week. We could thus state that epithelial morphogenesis is maximum around 16th week of gestation.

The spleen of foetuses stained positively for CD3 T-lymphocytes and CD20 B-lymphocytes by 16th g.w. By the 24th g.w. the white pulp showed two distinct components T-cell and B-cell regions.

The density of immunoreactive CD3 T-lymphocytes was less as compared to the immunoreactive CD20 B-lymphocytes in the spleen throughout gestation.

The morphological, histological and immunohistochemical studies has given us a clear understanding into the organogenesis of spleen which may be beneficial not only for anatomy but also for foeto-pathology, medical imaging and paediatrics.