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Biometerical study on foetal spleen of Indian buffalo (*Bubalus bubalis*)

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Spleen is the major organ of lymphoreticular system. But only a few reports are available on morphogenesis of buffalo foetal spleen. The study was conducted on spleen from 15 Indian buffalo fetuses. The foetal body was measured for crown rump lenght (CRL) in cm and age was calculated by using the formula given by Soliman (1975) as below:

Y=28.66+4.496 (CRL<20 cm)

Y=73.544+2.256 (CRL≥20 cm)

where, Y is the age in days and X is the CRL in centimeters.

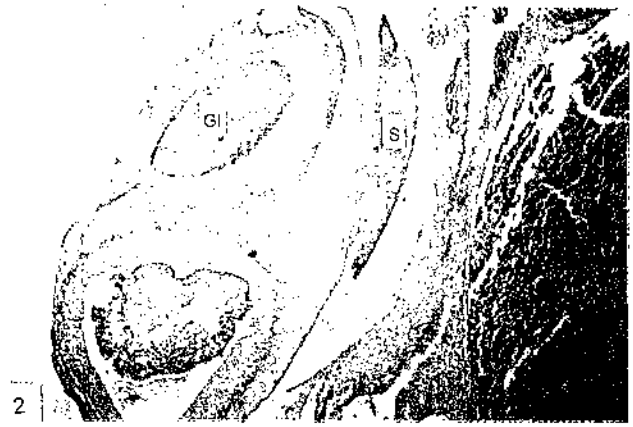
Based on CRL the samples were divided into group 1 (included foetal samples of CRL between 5.0–13.6 cm), 2 (included foetal samples of CRL between 22.5–37.5 cm), and group 3 (included foetal samples of CRL between 41.0–110.6 cm).

After measuring CRL, the foetuses were opened to collect the spleen and subjected to biometrical analyses (weight, volume, length and breadth). The tissue samples of spleen were then fixed in bouins and neutral buffered formalin to be processed for paraffin blocks preparation by acetone-benzene schedule (Luna 1968). The sections at 5–7 μm were obtained and stained with haematoxylin and eosin.

The developing spleen in buffalo foetuses was observed at dorsolateral aspect of fore stomach (Fig. 1). They found the spleen developing in the dorsal mesogastrium between forestomach and body wall. The colour of foetal spleen was creamish in group 1 (Fig. 1), became reddish due to development of haemopoietic islands in group 2, and dark red due to differentiation of large amount of red pulp in parenchymatous tissue in group 2.

In 5 cm CRL foetus, the spleen lay in close vicinity to developing gastrointestinal tract. It was small, flat, thin and spindle shaped and covered by a layer of simple squamous epithelium. The biometery of the spleen of group 1 foetuses could not be recorded because of the very small size of the spleen and it became measurable in groups 2 and 3. The mean length of spleen in group 2 and group 3 were recorded as 3.62±0.35 cm and 11.80±2.49 cm respectively. The organ became much thick in the center than its extremities with progression of age. The mean weight of spleen was 1.07±0.31 g in group 2, and 95.50±18.36 g in group 3. Similarly mean volume was 1.25±0.25 cm^3 in group 2, and 29.67±12.92 cm^3 in group 3. Malik *et al.* (2000) reported 51–80% increase in value of these parameters in developing goat spleen in early stages of gestation.

1



2

Figs 1–2. 1. Foetus of buffalo of 10.1 cm CRL showing topography of spleen. 2. Section of buffalo foetus of 5 cm CRL showing development of spleen(S) in close vicinity to gastro-intestinal tract (GI). Haematoxylin & Eosin. ×200.

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SUMMARY

The present study was conducted on buffalo foetuses (15) from 5.0–11.06 cm crown rump length (CRL) to study the morphogenesis and biometry of spleen during prenatal development. The spleen was observed at dorsolateral aspect of fore aspect of forestomach. The colour of foetal spleen was creamish during initial development and changed to dark red during terminal stages. The gross dimensions of spleen i.e. weight, length, breadth and volume of spleen increased with progression of foetal age. There was remarkable increase after mid gestation.

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