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Perosomus elumbis (Vertebral agenesis and arthrogryposis) in a stillborn indigenous calf in Kerala

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Abstract
Perosomus elumbis, a rarely encountered congenital anomaly of unknown etiology which is characterized by a series of malformations, including agenesis of vertebrae and the lumbar segment of the spinal cord. This partial agenesis of the spinal cord and deformity or lack of vertebrae in the lumbar, sacral and coccygeal regions lead to the shortening of the animal's body and atrophy of its posterior end, especially the hind limbs. A case was presented as dystocia due to foetal malformation. The calf was stillborn and affected with brachygnathism, arthrogryposis of the vertebrae (thoracic, lumbar, sacral and coccygeal) and hind limbs, scoliosis of the vertebral column with the fusion of last three thoracic, lumbar, sacral and coccygeal vertebrae.

Keywords: Perosomus elumbis, brachygnathism, arthrogryposis, scoliosis

1. Introduction
Perosomus elumbis is an occasionally found congenital disease of swine, sheep and dogs and is more commonly seen in cattle. It is characterized by partial or complete agenesis of lumbar, sacral and coccygeal vertebrae and usually includes arthrogryposis of the hind limbs and malformations of the musculature (Son *et al.*, 2008) [3]. This anomaly was first reported in a calf in the veterinary literature in 1832, and since then many cases have been reported (Jones, 1999) [2]. However, its accurate etiology has not been fully elucidated.

2. Materials and methods
A full term indigenous cow was presented with a history of dystocia, the dam was in lateral recumbence and exhibited severe pain while abdominal contraction. On per-vaginal examination the fetus was in normal anterior presentation, even though the feto-maternal proportion was normal the parturition was not progressing due to the abnormally formed hind limb of the fetus. The condition was corrected by mutation operations and the dam was treated with antibiotics, fluids, anti-inflammatory agents and B-complex injections. The still born calf had a shortened trunk, weighed 13.5 kg and had normal neck and thorax. It was affected with brachygnathism of the maxilla, arthrogryposis of the vertebrae (thoracic, lumbar, sacral and coccygeal) and hind limbs. Right sided scoliosis of vertebral column and laterally deviated pelvic bone was observed. Tail and both the anal and genital opening were absent.
Radiographic analysis revealed that the vertebral column was abruptly truncated with the complete fusion of the last three thoracic, lumbar, sacral and coccygeal vertebrae. Post-mortem examination revealed the normal appearance of visceral organs except posterior end of gastro-intestinal system and uro-genital system. Aankylosis was observed on both the hind limbs and severe atrophy noticed on distal portions of the lumbar muscles and of the hind limbs.

Fig 1: Still born calf with brachygnathism, arthrogryposis of vertebrae and limbs

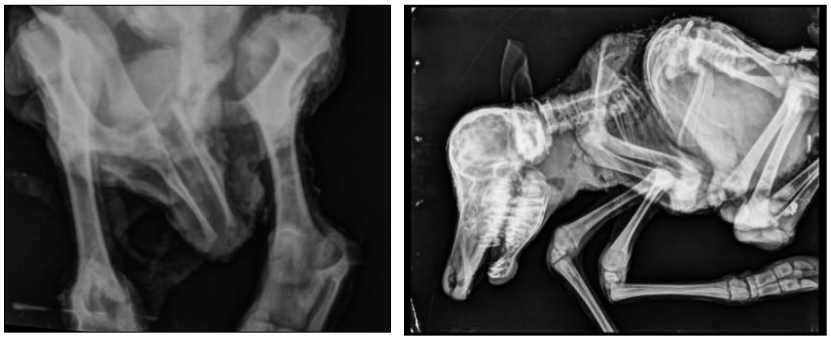

Fig 2 A): Pelvis ventro-dorsal view: malformed pelvis with fixed and deformed lumbar and sacral vertebrae.
B): Lateral view- head to thorax: Hypoplasia of horizontal ramus of mandible (Brachygnathism), malformation and ankylosis of thoracic vertebrae and spine.

Fig 3: Anatomical dissection: Right sided scoliosis of the vertebrae with deformed thoracic, lumbar and sacral vertebrae

3. Discussion

Perosomus elumbis is a rare disorder among cattle. Its aetiology is unknown and it represents less than 1 per cent of the observed congenital malformations in the species. Congenital defects can occur as a result of aberrations in the complex transition from the embryonic to the fetal phase of development. Malformation or improper migration of the neural tube during the tail-bud stage, accompanied by partial agenesis of the caudal spinal cord, appears to be the cause of this abnormality (Jones 1999) [2]. Another possible explanation is that it may result from non-closure of the neural tube near the middle of the neural tube (Hiraga and Abe 1987) [1]. One theory which was put forward to explain the occurrence of perosomus elumbis is that the conditionis caused by chromosomal mutation in the homeobox gene family in affected animals.

4. References

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