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Osteodystrophia Fibrosa in a Goat - A case report

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Osteodystrophia fibrosa is a condition associated with fibrous replacement of the resorbed bony matrix. In India, it is commonly reported in horses, and is most often associated with bran feeding, leading to higher availability of phosphorus and imbalance in the calcium phosphorus ratio. Low calcium or high phosphorus diet can result in secondary nutritional hyperparathyroidism leading to osteodystrophia fibrosa (Ozmen *et al.,* 2017). Bone resorption of calcium occurs associated with low calcium level in circulation. Deformities of the bone manifests associated with the severity of the condition.

Case history and Clinical observations

A nine month old male kid weighing 12 kg was presented to the University Veterinary Hospital, Mannuthy with a complaint of facial swelling for the past two months, reduced feed intake and loss of body condition. The animal was fed exclusively with concentrate feed consisting of bran, soyabean meal and coconut cake. On examination, the general appearance of animal was found abnormal puffy face and prominent eyeballs along with respiratory distress.The animal appeared dull and depressed, dehydrated with poor body condition. The gait was abnormal characterized by lameness and swollen joints. On clinical examination, mucous membranes were normal in colour, body temperature was102.2^{o}F. On oral examination, symmetrical enlargement of face and jaws which were soft in texture and difficulty in opening the mouth was observed. The tongue was protruded outwards with frothy salivation. Routine laboratory examination of dung sample and blood smear were negative. Serum biochemistry revealed elevated (1420 IU/L) alkaline phosphatase (ALP), serum calcium and phosphorus were 7.6 mg/dl and 2.5 mg/dl respectively, serum protein, albumin and globulin were recorded 5.9 g/dl , 3.4 g/dl and 2.5 g/dl respectively. Radiograph of lateral and dorso-ventral view of skull indicated radiolucence of skull bones especially mandible

and maxilla (Fig. 1 and 2). Reduced bone density characterized by osteolytic changes of alveolar sockets with irregular alignment of all teeth roots were noted. Facial bones showed excessive demineralization and osseous changes which were more prominent towards mandibular symphysis. Based on history, clinical signs and radiograph, the condition was diagnosed as osteodystrophia fibrosa. The prognosis of this case was grave due to irregular arrangement of teeth, which would gradually loosens itself and falls off over time making it difficult for prehension and mastication. The owner was advised to provide a balanced goat feed avoiding bran containing feed stuff and oral calcium and vitamin D supplements was also advised.

Fig. 1 : Radiolucence of skull bones – lateral view

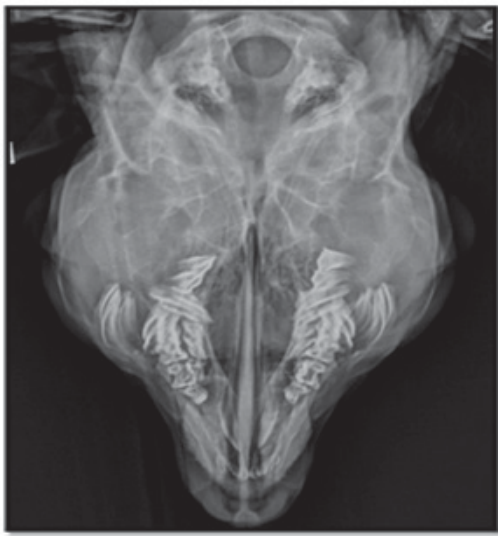

Fig. 2 : Radiolucence of skull bones – dorso-ventral view

Osteodystrophia fibrosa is a metabolic condition associated with excessive bone resorption, proliferation of fibrous connective tissue and insufficient mineralization of the bone tissue and thus the name osteodystrophia fibrosa (Bandarra *et al.,* 2011). Enlargements or deformities of facial bones (mandible and maxilla) are characteristic alterations observed in goats affected by fibrous osteodystrophy (Thompson, 2007). Report of the occurrence of the condition in southern India is scarce (Manju and George, 2011). It is a major disorder of horses and is also referred as Miller's disease, Bran disease or Big head disease due to high phosphorus content in feed. Improvement in skeletal deformities may result with modifications in feed to reduce phosphorus level and improving the calcium content by supplemenatation over a period of time. It is sporadically reported in goats, pigs, reptiles, guinea pigs, dogs and cats and rare in sheep and cattle.

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