**CASE REPORT**
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# NUTRITIONAL FIBROUS OSTEODYSTROPHY IN GOATS- REPORT OF TWO CASES

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## ABSTRACT

Fibrous osteodystrophy is a condition characterised by marked bone resorption with fibrous tissue proliferation and insufficient mineralisation of immature-bone. In this report two kids of same litter having four months age were presented with inanition, dyspnoea, exophthalmos and marked facial swelling since few days. On examination the facial bones were tender and soft and tongue was protruded out. Biochemical evaluation of serum revealed lowered blood calcium and increased phosphorous level. The animals were treated with calcium and vitamin D injections and oral phosphate binders.

**Keywords:** Fibrous osteodystrophy, Kid, Feeding, Management

## INTRODUCTION

Fibrous osteodystrophy (FOD) also known as osteodystrophia fibrosa or osteitis fibrosa cystic is a metabolic disorder leading to marked bone resorption, fibrous connective tissue proliferation, cyst formation and insufficient mineralisation of immature-bone (Thompson, 2007). The main cause is the continuous and extensive action of parathormone (PTH ) on bones.

## CASE HISTORY AND OBSERVATION

Two kids of about four months of age were presented to District Veterinary Centre, Kottayam with the complaint of off-feed and facial swelling since few weeks. On examination, the face was puffed up with prominent protruded eye balls. The animals were dull and inactive. They were fully maintained on concentrate feed consisting of wheat bran, coconut oil cake and pelleted feed of the doe. Clinical examination revealed normal mucous membrane and body temperature. The animals were dehydrated. Oral cavity revealed swollen and enlarged facial bones. There was symmetrical enlargement of face and jaws. The bones were very soft in texture, tongue was protruding out and animals were showing difficulty in opening the mouth. The dung sample examination did not reveal any parasitic ova. The blood

smear examination showed no pathogenic organisms. Haematological examination revealed all the parameters to be normal. Serum biochemistry revealed serum calcium 5.8 mg/dl and 6.0 mg/dl for the two kids. Serum phosphorus examination revealed 7.0 mg/dl and 7 .8 mg/dl respectively. Based on history, feeding habits, clinical signs and haematology the condition was diagnosed as osteodystrophia fibrosa.

## TREATMENT AND DISCUSSION

The animal was given supportive treatment with parenteral calcium (Inj. Calcium Sandoz –Novartis India Ltd) 6 ml intravenously once in a week, Inj Vitamin D (Arachitol-3 L Abbott Ltd) and Inj Meloxicam (Melonex-Intas pharmaceuticals) @0.3 mg/kg intramuscularly at three days interval in first week followed by weekly single injections for 4 weeks. Antacid with phosphorus binding action containing magnesium and aluminium hydroxide (Gelusil-Pfizer Ltd) was given orally @ 5ml bid and oral calcium (Ossomin-TTK Ltd) suspension was prescribed for a month. Weekly review showed slight improvement in swelling. One kid showed apparently very good improvement by one month and the other showed slight improvement only. The animal started to take small quantity feed. After 1.5 months the kids were not brought for review.

Fibrous osteodystrophy also known as osteodystrophia fibrosa or osteitis fibrosa cystic is a metabolic disorder leading to marked bony resorption, fibrous connective tissue proliferation, cyst formation and insufficient mineralisation of immature bones (Thompson, 2007). The pathogenesis involves the persistent increase of PTH

**Fig. 1.** Before treatment

**Fig. 2.** Fourth week after treatment

hormone levels in plasma, associated with primary or secondary hyperparathyroidism. In this condition bones like maxilla and mandible are gradually softened and become flexible as noticed in this case. Radiography will reveal areas of rarefaction and cystic spaces in bones. The condition is more common in horses referred to as Millers disease, Bran disease or Big Head disease due to high phosphorus content in feed (Tejasini *et al.,* 2018). In this case the animals were fed on bran and concentrates. Feed modifications will produce improvement in skeletal deformity. In feed the phosphorus concentration has to be reduced and calcium and vitamin D need to be supplemented to control the occurrence of this condition. Inj Calcium 7ml every 3 days, Vitamin D 10,000 IU/Kg BW once in a week was given as prophylactic treatment in a study (Ozmen, 2017). The affected animals have to be treated with calcium preparations, Vitamin ADE, anti-inflammatories and antibiotics in the case of secondary bacterial infection (Akter *et al*., 2018). In this case animals were given all the treatment except antibiotics as they were not showing any infections in the oral cavity. The compensatory hyperparathyroidism and associated fibrous dystrophy are usually caused by lack of dietary calcium in conjunction with excessive phosphorus. The disease develops in herbivores feeding a diet of Ca:P ratio of 0.8 or lower (Thompson, 2007 and Woodard, 1997) whereas desirable ratio is 2:1 (Radostits *et al.*, 2007). Vitamin D deficiency and reduced calcium absorption have to be corrected by proper management and long term treatment. There is little knowledge about the treatment of this condition. The success of treatment depends on the degree /severity of clinical signs (Ozmen, 2017).

## CONCLUSION

Early diagnosis and treatment of nutritional fibrous osteodystrophy in goats can ameliorate the prognosis of the condition. In the presented case, early treatment had led to improvement in the condition. In addition to treatment, awareness about proper feeding and management among farmers is an indispensible step towards prevention of nutritional fibrous osteodystrophy.

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