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Oestrus induced hypocalcaemia in a cross breed jersey cow: A case report

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Abstract
A seven-year-old cross breed jersey cow was presented with a history of estrus followed by lateral recumbency. On observation cow was dull, depressed, anorectic, difficulty in defecation and urination, tail in a raised position with straining for defecation and respiratory distress. Physical examination revealed subnormal temperature (99.5° F), increased heart rate 80/min with low intensity of heart sound, dry muzzle and cool extremities. Rectal examination revealed the presence of mucus in the rectum. Cow was having mild bloody vaginal discharge and it was suspected as metestrus. The blood sample was showing low serum calcium of 4.2 mg/dL and it was confirmed as esturs induced hypocalcemia. The cow was treated with calcium borogluconate 250 ml I/V and 200 ml subcutaneously followed by oral drenching of calcium and the cow was recovered uneventfully.

Keywords: estrus, hypocalcemia, cow

Introduction
Hypocalcemia is a metabolic disease, commonly seen in crossbred cows due to milk fever. It is characterized by inability to stand, general muscular weakness, circulatory collapse, depression and loss of consciousness (Manjunath *et al.*, 2019) [5]. Cattle were reported to be more susceptible than any other livestock species. Crossbreed, female, older animals and lactating animals were commonly affected by hypocalcemia (Quader *et al.* 2017) [8]. Although treatment with intravenous infusion of calcium salt solutions cures most clinical cases of hypocalcemia, such cows are later more susceptible to other metabolic and infectious diseases (Thilsing-Hansen *et al.* 2002) [7]. Various studies have been reported already regarding hypocalcemia during parturition but few cases were only recorded during or after estrus. This paper explains the clinical examination, diagnosis and medical management of post estrus hypocalcemia in a crossbreed Jersey.

Case history and treatment
A seven-year-old crossbreed jersey cow was presented with the history of estrus followed by lateral recumbency. On observation cow was dull, depressed, anorectic, difficulty in defecation and urination, tail in a raised position with straining for defecation and respiratory distress (Fig. 1). Physical examination revealed subnormal temperature (99.5° F), increased heart rate 80/min with low intensity of heart sound, dry muzzle and cool extremities. Rectal examination revealed the presence of mucus in the rectum. As per the history of the owner a day before cow was having mild bloody vaginal discharge and it was suspected as metestrus. The blood sample was showing low serum calcium of 4.2 mg/dL and it was confirmed as esturs induced hypocalcemia. The cow was treated with Ringers lactate at 5ml per kg i/v, Chlorpheniramine maleate at 0.4mg per kg i/m, Vitamin D3 at 600 I/U per kg i/m and 23% of Calcium borogluconate 250 ml I/V and 200 ml subcutaneously followed by oral drenching of calcium 300 g and the cow was showing response to therapy like urination and defecation and it was recovered uneventfully (Fig. 2)

Fig 1: Recumbancy due to low serum calcium (Before treatment)

Fig 2: Standing animal with defecation (After treatment)

Discussion

Hypocalcemia has been recognised in cattle for about 215 years and its clinical signs have not changed. It was only 80 years ago that abnormal parathyroid gland function was associated with the pathogenesis of the hypocalcemia characteristic of the disease, and the current basis for its treatment with intravenous calcium salts was established (Murrey *et al.,* 2008). Jersey cows were at 2.25 times higher risk of milk fever than Holstein cows (Lean *et al.,* 2017) [4]. In the present study physical examination was performed and it was showing vital parameters were within the normal range. However, upon auscultation of the heart, there was a decreased intensity of the heart sound. The cow was on left lateral recumbency. Rectal examination revealed the presence of mucus in the rectum (Jesse *et al.* 2016) [3]. Cow was having mild bloody vaginal discharge and it was suspected as metestrus, post estrus hypocalcemia (Hamali 2008) [2]. The blood calcium level in the affected animals was 4-6 mg/dl indicating hypocalcemia (Manjunath *et al.,* 2019) [5]. Best results are obtained with oral calcium treatment, for control of hypocalcemia a dose is given at calving and again 24 hours after calving (Goff, 2008 and Quader *et al.* 2017) [1, 8]. The elevation of blood estrogen may precipitate hypocalcemia attacks during the period of estrus. Rising in estrogen level at the time of estus may be interfering with calcium mobilisation from bone (Hamali 2008) [2].

Conclusion

The estrus-induced hypocalcemia observed in the present study may be due to increased blood estrogen level, stress, obesity and excitement during the estrus periods which interrupts calcium mobilization from its reservoirs.

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