CASE REPORT

Diagnosis and Clinico-Surgical Management of Secondary Laminitis due to Ovarian Tumour in a Kathiawari Mare

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Granulosa cell tumours (GCTs) are the most common ovarian tumours in equine which involves around 2.5% of all tumours of horses and 85% of reproductive tract tumours (McCue *et al.* 2006). Tumours may originate from tissue present within the equine ovary. GCTs are most often first detected during either routine reproductive examination for breeding or when behavioral changes caused by the presence of the tumour in ovary requiring further investigation (McKinnon and Barker, 2010). Mares with GCTs remain infertile due to atrophy of the contralateral ovary, which has been variably associated with elevated serum inhibin, testosterone or anti-Mullerian hormone concentrations (Ball *et al*., 2012). Surgical removal is regarded as the treatment of choice for GCTs (McCue *et al.,* 2006). Surgical removal of the affected ovary almost always results in the resumption of normal heat cycles and the ability to carry a normal pregnancy. Lameness in mare which suffered from GCT was also reported earlier by Meagher *et al.* (1977). Various scientists reported different technique for removal of affected ovary. Standing laparoscopic ovariectomy is associated with a lower complication rate than other surgical methods like colpotomy (Colbern and Reagan 1987), flank, paramedian or ventral midline celiotomy (Lee and Hendrickson, 2008; Azizi *et al*., 2014). Most of GCTs are benign and affect the left ovary (McCue *et al.* 2006; Korany *et al*., 2020). The present document reports clinical diagnosis and surgical management of secondary laminitis due to ovarian tumour in a Kathiawari mare by left flank ovariectomy of the affected ovary.

Case History and Observations

A ten years old Kathiawari mare was admitted to Veterinary Clinical Complex of the College, Kamdhenu University, Junagadh (India) with a history of lameness having quadrilateral laminitis and not responding to the treatment given by local veterinarians. Incidentally, the owner of the mare requested for assessment of reproductive system as the animal was infertile since last two years. Transrectal ultrasound examination revealed left side multi-lobulated fluid filled ovarian structure or cystic cavitations which suggested multiple cystic ovaries due to granulosa cell tumour (Fig. 1). It was decided to remove left ovary with ovarian tumorous mass surgically.

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Treatment and Discussion

Mare was prepared for surgery after standard preoperative preparation, *viz.,* off feed, off water, shaving (Fig. 2) and routine blood parameters. The mare was anaesthetized by Xylazine 1.1 mg/kg and Ketamine 2.2 mg/kg B.W. for induction, and then the mare was shifted onto operation table by hoist. Isoflurane 2% was used for maintenance during entire surgical procedure of left flank laparotomy under right lateral recumbency. The tumorous mass (900 gm) was excised out following transligation of ovarian pedicle (Fig. 3, 4). The laparotomy wound was closed by routine standard procedure. Postoperative fluid therapy for five days as well as antibiotics (Amoxicillin and Sulbactum, 10 mg/kg, Gentamicin 4 mg/kg), analgesic (Flumixin meglumine 1.1 mg/kg) and local wound dressing were instituted for ten days.

Fig. 1: Trans-rectal USG: multicystic fluid filled structure in left ovary.

Fig. 2: Surgical site prepared for laparotomy

Fig. 3: Tumour explored from the laparotomy incision

Fig. 4: Excised cystic tumorous mass

Animal showed uneventful recovery and the laminitis also showed progressive resumption of normalcy over a period of two months.

Granulosa cell tumour is the most common ovarian neoplasm found in the mare and most frequent indication for non-elective ovariectomy. This case report describes granulosa cell tumour in a Kathiwari mare having infertility since long time and laminitis. Many scientists reported infertility, stallion like behaviour, and aggressiveness due to influence of steroid hormone (Crabtree 2011; Daniel *et al*. 2015). Other symptoms include stiffness, exercise intolerene, colic, haemoabdomen, and peritonitis. In present case laminitis was a unique symptom which was secondary to ovarian tumour and didn't respond to medical management. Ovariectomy for treatment of GCT has an excellent survival rate and when performed unilaterally, horses resume normal ovarian cycling and reproduce successfully (Sherlock *et al*., 2016). Ultrasonographic examination of GCT typically shows the presence of multiple cystic compartments, resulting in the honey-comb appearance. In the present case, left flank laparotomy was performed for removal of unilateral ovarian tumorous mass which was required to bring normal cyclical activity and suppress the symptoms of lameness as recommended by McKinnon and Barker (2010). Removed mass had gross appearance of multilobulated round mass and weighed 900 gm (Fig. 4). Histopathological investigations of removed mass showed granulosa cell tumour. Bilateral granulosa cell tumour has been also reported by Turner and Manno (1983). Horses with ovarian tumour were presented with similar clinical signs, but symptoms of laminitis were very less frequent. The present mare recovered uneventfully following unilateral ovariectomy of tumourous ovary with routine post-operative treatment for seven days.

In brief, equine ovarian tumour diagnosis and surgical management is a big challenge for practicing veterinarians in field conditions. Laminitis like musculoskeletal disorder some time observed is secondary to some other pathological or hormonal disorders. Correct diagnosis and good surgical aseptic precaution give positive outcome of equine laparotomy. In the present case, laminitis was observed secondary to ovarian tumour, which also showed progressive resumption of normalcy over a period of two months after surgery.

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