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Clinical and Pathological Findings of Ulcerative Prepuce Squamous Cell Carcinoma in a Marwari Horse

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ABSTRACT

Squamous cell carcinoma is one of the muco-cutaneous soft tissue growths occurs in horses. Proliferative external genitalia squamous growth is a common type. This case report is about ulcerative squamous growth which is common in eyeball but uncommon in prepuce area. A Marwari 11 year old stallion was presented to the Veterinary Clinical Complex, Veterinary College and Research Institute, Namakkal with the history of mass in the external genitalia which had increased in size gradually over 12 months with ulceration shown in the last 5 weeks of that period. On clinical examination, ulcerated mass was noticed in the prepuce. Pudental nerve block was done for physical examination. Fine needle aspiration cytology and impression smear didn't reveal tumour pathology. The presented case was tentatively diagnosed as preputial tumour and planned to perform surgical excision. Under xylazine and ketamine anaesthesia and triple drip maintenance, the preputial tumour mass was excised and samples were sent for histopathology which revealed poorly differentiated squamous cell carcinoma. Post-operative antibiotics, painkillers were administered and wound dressing done for 5 days. Animal had an uneventful recovery without recurrence.

Key words: Cutaneous, Equine, Prepuce, Squamous cell carcinoma.

Squamous cell carcinomas occur in various areas of the equine body and are especially common at muco-cutaneous junctions (Newkirk *et al.,* 2014). Muco-cutaneous squamous cell carcinoma (MC-SCC) is the second most common skin tumour of the horse (Valentine 2006; Theon *et al*., 2007) as well as the second most common equine tumour overall. Reported locations of squamous cell carcinoma in the horse have included the eye, skin, external genitalia, urogenital tract, oesophagus, stomach and nasal cavity (Valentine 2006, Newkirk *et al.*, 2014). Chronic high Ultraviolet light exposure and skin irritation are regarded as a crucial aetiological element in the transformation of squamous cells and subsequent development of tumours (Safak *et al*., 2022). The nature of MC-SCC varies widely and ranges from slow growing, benign tumours to rapidly growing, highly malignant and invasive tumours. MC-SCC is locally invasive and typically slow to metastasise to local lymph nodes, but the frequency of metastasis for MC-SCC is reported to be as high as 19% (Taylor and Haldorson, 2013). Differential diagnoses for equine MC-SCC include equine sarcoid, papilloma (especially of the genitalia and third eyelid), mast cell tumour, exuberant granulation tissue, habronemiasis, phycomycosis, cutaneous lymphoma and melanoma. Definitive diagnosis requires submission of affected skin/ mucosa for histopathological examination in the form of a biopsy, although radiography and computed tomography may help differentiate para-nasal sinus SCC from sinusitis. Although, there are various therapy options depending on the tumour's size, location, spread andamount of treatment, surgical intervention, cryotherapy, hyperthermia, radiotherapy, Onphotodynamic therapy are among the treatment options (Taylor and Haldorson, 2013). Squamous cell carcinoma is one of the mucocutaneous soft tissue growths occurs in horses. Squamous cell carcinoma is highly invasive (Kumar *et al.,* 2024) and Proliferative external genitalia squamous growth is a common type. The present case reports the ulcerative squamous growth which is common in eyeball but uncommon in the prepuce area.

An 11 year old Marwari stallion was presented to the Veterinary Clinical Complex, Veterinary College and Research Institute, Namakkal with the history of mass in external genitalia which had increased in size gradually over 12 months with ulceration shown in the last 5 weeks

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of that chemotherapy and period. clinical examination, ulcerated mass without capsulation was observed in prepuce skin (Fig 1). Under pudendal nerve block using 2% lignocaine, external genitalia was thoroughly examined and ruled out penile involvement. Fine needle aspiration cytology and impression smear revealed many neutrophils suggestive of acute inflammation. Preoperative vital and haemato-biochemical parameters were analyzed and were within the normal range. Based on history, clinical examination and cytology, the present case was tentatively diagnosed as preputial tumour and decided to perform surgical excision after getting consent from the owner.

The animal was premedicated with Inj.Xylazine at the dose rate of 1.1 mg/kg b.wt intravenously and induced with Inj.Ketamine at the dose rate of 2.2 mg/kg b.wt intravenously. Preoperative antibiotics and painkillers were given. The animal was kept in lateral recumbency and the surgical site was aseptically prepared. The anaesthesia was maintained with triple drip (500 ml guaifenesin (10%)+500 mg xylazine+1g ketamine) infused intravenously at 1-2 ml/kg/hour. The surgical site was draped and the ulcerated mass in prepuce region was completely debulked with help of electrical diathermy (Fig 2) in which a satisfactory surgical margin of 2.0 cm was achieved and



Fig 1: Ulcerated mass without capsulation- Preputial skin.



Fig 2: Ulcerated mass in preputial region was completely debulked with help of electrical diathermy.

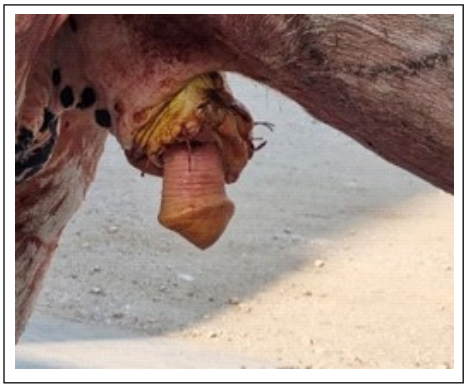
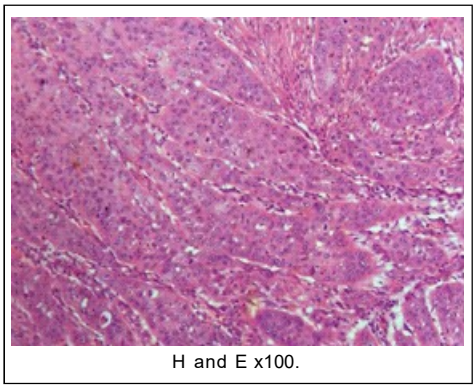
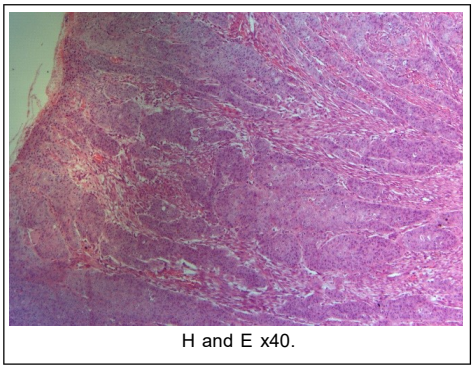


Fig 3: After tumour excision and skin closure.



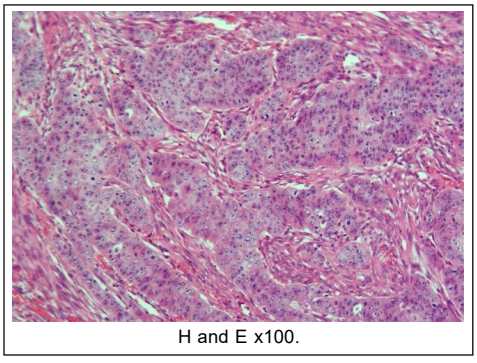
H and E x100.

Fig 4: Nests and trabeculae of squamous epithelial cells.



H and E x40.

Fig 5: Proliferating squamous cells extending from the surface.



H and E x100.

Fig 6: Squamous cells with amphophilic cytoplasm and numerous mitotic figures.

skin closed with cross mattress suture pattern by using cotton thread (Fig 3).

The tissue samples sent for histopathological examinations were fixed in 10% formalin solution for definitive diagnosis. Post-operative care was taken by antibiotics, painkillers and wound dressing for 5 days. Histopathology examination revealed sheets or nests and trabeculae of highly pleomorphic squamous epithelial cells with less squamous differentiation. The neoplastic cells had amphophilic cytoplasm and contained vesicular nucleus with prominent basophilic nucleoli (Fig 4). The proliferating squamous cells were extending from the surface epithelium into the underlying tissue (Fig 5). Numerous mitotic figures were also observed (Fig 6). Based on the finding, the tumour was diagnosed as poorly differentiated muco-cutaneous squamous cell carcinoma.

Equine muco-cutaneous squamous cell carcinoma cases reported in many body parts including eyelid, cornea, limbus, pinna, face, perianal region, extremities and genitalia. The present case was having growth in the genitalia or prepuce accounts for 13% considering the different parts of body as per (Theon *et al.,* 2007). Squamous cell carcinoma develop at non-pigmented skin and at muco-cutaneous junction such as ocular region and external genitlia (Sykora and Brandt, 2017). Genital warts are usually benign exophytic lesion with koilocytosus infected by non-carcinogenic human papilloma vius (Cubilla *et al*., 2016). Chronic irritation afforded by smegma might be the common reason for MC-SCC in male horses (Van Howe and Hodges, 2007). The present horse was from a private owner and the horse always roaming in a grazing field.

Injection 5- flurouracil has been successfully used in tumours in the genitalia of horses (Fartier and MacHarg, 1994). But in the present case the drug was not utilized due to the reluctance of the horse owner. Several treatment options have been available for equine mucocutaneous squamous cell carcinoma such as surgical management, cryotherapy, hyperthermia, radiotherapy, chemotherapy and photodynamic therapy (Taylor and Haldorson, 2013) are used with degrees of success relative to the accessibility and invasiveness of the tumour and in the present case , the surgical excision was chosen. These are most successful when treatment is initiated early in the course of disease. The mode of transmission of Equua caballus papilloma virus type-2 in horses is still unclear. So immunisation of both male and female foals is the effective way of prevention (Schellenbacher *et al*., 2015) and owner was advised accordingly.

Conclusion

Several treatment modalities have been successful in eliminating or managing MC-SCC, with surgical excision yielding the best results. Early recognition of tumours and prompt intervention are associated with a positive outcome.

Acknowledgement

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Ethics statement

No ethical statement was given since the manuscript describes a clinical case in which the horse was given the most appropriate medical treatment to resolve its medical issues

Author contribution

All the authors from clinics and surgery have contributed in the horse anaesthesia and surgical procedures. PG students have contributed in the post operative follow ups. Pathology staff has contributed in the Histopathology study.

Conflict of interest

No conflicts of interest have been declared.

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