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Cutaneous sarcoid in a Mule: A clinico-pathological investigation and successful surgical intervention

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Abstract

Sarcoid is cutaneous tumour in horses, mules and donkeys and histologically similar to fibrosarcoma with limited malignancy. Commonly seen around nostrils, lips, neck, shoulder, lower part of legs, back, prepuce and face region. The present case reported a nodular ulcerating growth in the dewlap (brisket) region of the mule aged 6 years. This tumour was exposed to trauma and ulceration with supervening infection. Grossly, the growth appeared to be mixed form of sarcoid. The histopathological findings revealed irregular hyperplasia of the epidermis as characterized by deep rete ridges along with highly cellular mass arranged in interlacing network with small to moderate sizes of bundles of pleomorphic spindle cells of fibroblast origin suggesting nodular-fibroblastic sarcoid. An area of ulcerations with secondary bacterial infections was also noted. The case did not respond to standard Anthiomaline treatment hence the growth was surgically excised. Regular antibiotics along with localized antiseptic dressing resulted in complete recovery of animal.

Keywords: Sarcoid, histo-pathological studies, surgical management, equine cutaneous neoplasms, Himachal Pradesh

Introduction

Sarcoid(s) are non-malignant cutaneous tumours of equine species, which grows locally (Valentine, 2005) [1]. A wide variety of equids are susceptible to this neoplastic condition which includes mule, donkeys and Zebra (Schaffer *et al.*, 2013) [2]. Clinically, they are indistinguishable from many fibroblastic skin tumours, however their persistent recurrence and aggressive growing tendency makes their differentiation easy. Though having a tendency to effect any injured body surfaces, a few specific regions are however have highest proclivity for their occurrence like head region, the underneath of abdomen, chest, ears or lower limb and thus at times makes their removal impossible (Nasir and Campo, 2008) [3]. Often, this type of cutaneous growth experiences injury by virtue of their close locations and apposition with other body's surface. Constant irritation or previous injury commonly results in their genesis apart from Bovine papilloma virus (BPV) infection as its primary etiologic reason. Perhaps, this condition is also stated to be the one of the few natural cross species infections (Campo, 2006) [4]. Globally, a wide array of therapeutic and surgical approaches are being proposed to treat the cases (of sarcoid) including the recent use of *Mycobacterium* cell wall fraction and an antiviral drug acyclovir (Stadler *et al.*, 2011; Caston *et al.*, 2020) [5, 6], however not all culminate in to a complete resolution of the condition. Here in this report, we attempted surgical resection as minimal therapeutic intervention available to us that results in an uneventful and complete remission of growth. In addition, addressing to our inquest for nature of growth, we attempted histological characterization of cutaneous growth which was noted on dewlap (brisket region) on standard classification criteria of sarcoid (Pascoe and Knottenbelt, 1999). Going by its site of occurrence (i.e. location), to our knowledge, no report exists to confirm its occurrence at the dewlap (brisket region) and perhaps is the first record of sarcoid in mule at an aberrant location.

History and clinical observations

A 6-year-old locally bred mule was presented at Veterinary Hospital Shillai, District Sirmour Himachal Pradesh with a history of open, progressive ulcerating growth at a dewlap (brisket) region. On aseptic cleaning of surface, the growth appeared markedly haemorrhagic with putative penetrative opening surrounded by little granulation spur, signifying its genesis as a result of constant irritation by the closely apposed surface (Figure 1A).

According to owner, initially the growth started as small outgrowth with no imminent signs of ulceration (Approx. 4 months back) and develops suddenly as a quick large benign ulcerating mass, leading to impediment in its mobility and physical endurance. Based on above presentation, a presumptive diagnosis of equine sarcoid was made. A decision to undertake surgical excision of ulcerating mass was initiated after unsuccessful therapeutic attempt with lithium salt of Anthiomaline.

Treatment

Surgical treatment includes aseptic excision of tumour and was performed with xylazine injection (2%w/v) @ 1.1 mg/ kg BW followed by Ketamine injection (5%w/v) @ 2.2 mg/kg BW. This was decided upon assessing certain factors like size and location of tumour. Prior to this, local desensitization around the growth was obtained after infusing 30mL Lignocaine HCl 2%. Clinically, the affected area revealed ulcerated surfaces with voluminous vascular supply giving an impression of freshly developed wound. The animal was made to lay down in left lateral recumbency, with head fixing down to avoid breathing difficulties and aspiration pneumonia. An incision was made around the pedicle of the lesion and the mass was removed en bloc after dissection. This was particularly done to ensure complete excision of growth to avoid any further recurrence due to appositional frictions or irritation. Such practices have also been found to effective in containment of the condition especially of benign tumours (Knottenbelt *et al.*, 2017)^[11]. Finally, the skin wound was sutured using interrupted horizontal mattress with silk suture No.0. Inj Amoxicillin Sodium + Cloxacillin Sodium 4 gm. I/M od x 5 days, Inj Meloxicam 15ml I/M, od x 5 days, Inj B complex 10 ml I/M ad x 3 days were sincerely followed in this case. Antiseptic dressage with betadine, Zinc Oxide and Boric acid was carried out along with the use of Topicure plus spray for local application. The skin sutures were removed on the 10th day. The affected animal recovered subsequently with no information of its recurrence till date (Figure 1 B).

Results

Pathological observation

During surgery, few small pieces of tissue from multiple sites of singular growth were taken in 10% formalin and processed with standard histopathological protocol. The cut tissue sections were stained with Hematoxylin and Eosin staining method (Luna, 1968) and mounted with DPX. The slides were examined under bright field microscope for histopathological interpretations.

The histological section of tissue(s) explained irregular hyperplasia of the epidermis as characterized by deep rete ridges along with highly cellular (fibroblast) mass arranged in interlacing network with small to moderate sizes of bundles of pleomorphic spindle cells (Figure 2A and 2B). A region of dense whorl like pattern of mature fibrocytes surrounding immature fibroblast was seen at deeper zones. Amidst areas of fibrous whorl, zone of haemorrhages were also evident. Area of ulcerations with sporadic to extensive zone of secondary bacterial infections was seen particularly at epidermal surfaces (Figure 3A and 3B). Based on this, the lesion can be classified as case of nodular –fibroblastic sarcoid.



Fig 1: A. Nodular, highly ulcerating, haemorrhagic mass in the dewlap area. B. Same area after successful surgical ablation of growth reported after 3 months as follow up. No recurrence of growth reported till to date.

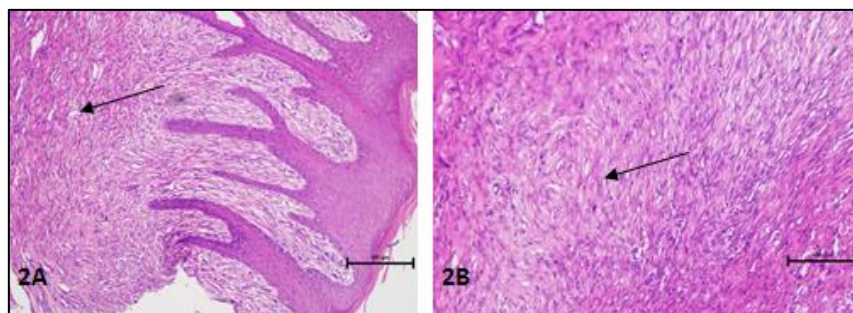


Fig 2: A. Skin, sarcoid with interlacing network of small to moderate sizes of bundles of pleomorphic spindle fibroblast cells x 20, H & E. B. An indistinct whorl like pattern of mature fibrocytes surrounding immature fibroblast was seen at deeper zones x 20, H & E.

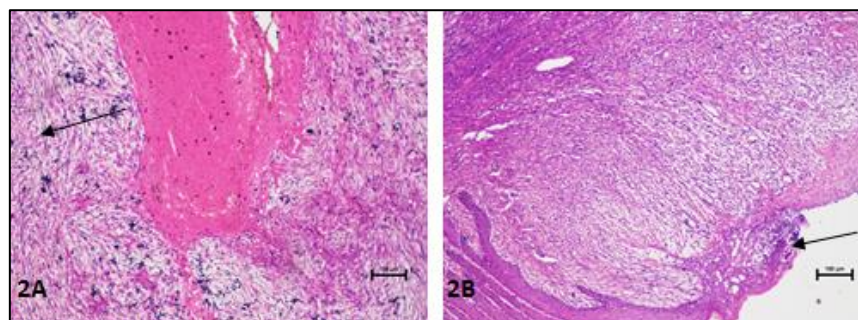


Fig 3: A. Skin, sarcoid, zone of haemorrhages with definitive whorling of fibroblasts cells x10, H & E. B. Skin, sarcoid with zone of ulcerations laden with secondary bacterial infections x10, H & E.

Discussion

Perusal of previous scientific record suggests occasional reporting of Sarcoid in mule (Yu., 2006). Perhaps, unlike horses, the utility of this species is limited to perform manual and draught activities (Ramaswamy., 1985) ^[14]. Notably, the sarcoid growth in this case resolved with an uneventful recovery after surgical resection, despite its aggressive nature and location. Normally, the unique location of its occurrence tends to place the surface to meet constant rubbing, remarkably evaded this incidence. Probably, this was only possible due to complete surgical uprooting of the growth from its pedicle. Similar practices are also being carried out in cases of some benign tumour, which eventually affects functional aspects of the surface or organs involved (Mahajan and Gupta., 2017) ^[12]. We report this as mixed sarcoid based on histological observation of thin and short epidermal rete pegs next to the region of erosions and ulcerations which is a feature of nodular growth along with strong deeper presence of dermal fibroblast in haphazard fashion (Martens *et al.*, 2000) ^[8] resembling fibroblastic lesion. A proliferating contact of fibroblasts with denuded epidermis was additionally noted thereby making this as unique nodular-fibroblastic sarcoid (Pascoe and Knottenbelt, 1999) ^[7]. Initial therapeutic management with lithium salts of Antimony thiomalate (Anthiomaline) didn't yield successful regression of growth. This was adopted, due to its promising success noted against several cases of cutaneous warts produced by Bovine papilloma virus 1 and 2 (BPV) in cattle (Kavithaa *et al.*, 2014) ^[9]. The mode of action of Anthiomaline in regressing cutaneous growth is not fully known, however can be relate to immunological mechanism leading to activation of immune cells inducing apoptosis of proliferating cells. Not all cases of equine sarcoid respond singly to Anthiomaline treatment, requires additional therapeutic interventions like Vincristine sulphate for their complete resolution (Jaglan *et al.*, 2018) ^[10]. Recently, few new non surgical, therapeutic modalities have also been tried against equine sarcoid which includes Mycobacterial cell wall fraction injection in to the lesions (Caston *et al.*, 2020) ^[6] and Aciclovir application (Stadler *et al.*, 2011) ^[5], with some success. Yet to see their wide scale usage in clinical cases. Paradoxically, none of them offered complete resolution of growth in the empirical cases. Their success at independent level were only limited to mild to moderate type of sarcoid, and they supplementary act as an adjuvant agent in combination with surgical ablation of growth. Hence, surgical removal, if performed with absolute removal of tissues tends to completely resolve the lesions without any further recurrences.

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