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Therapeutic Management and Histopathological Study of Sarcoid tumours in Equine

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A B S T R A C T

Equine sarcoids are locally invasive, fibroblastic skin tumors and represent the most common skin tumor in equidae worldwide. The study was conducted on 8 clinical cases of equine having problem of sarcoid tumour which included 6 horses and 2 mules. The sarcoid growth was removed by surgical intervention under anaesthesia of xylazine and ketamine at the dose rate of 1mg and 2mg per kg body weight, respectively through intravenous route. Post- operatively, Vincristine sulphate was intravenously administered along with supportive therapy. Recurrence of sarcoid was observed in two cases out of eight cases and the rest recovered without any complication. Among the eight cases, three suffered from fibroma, 2 from granulation tissue with excessive proliferation of fibrous tissue and one from squamous cell carcinoma. The biopsy samples of the remaining two cases were not available.

Introduction

The sarcoid is a type of skin tumor that affects the equine family. Equine sarcoids are locally invasive, fibroblastic skin tumors and represent the most common skin tumor in equidae worldwide (Jackson 1936; Ragland *et al.*, 1970; Pascoe and Summers 1981). They can occur as single lesion or more commonly multiple lesions in different forms ranging from small wart-like protuberances to large ulcerated fibrous growths. The main types of sarcoid are occult, verrucous, nodular, fibroblast, mixed and malignant types. This disease seldom kills the horse but many horses lose their body condition up to such an extent that they have to be destroyed on humanitarian ground. It is quite often difficult to diagnose a lesion as a sarcoid because sarcoids have close resemblance with other skin conditions. These tumours are persistent, grey and hairless; often circular or roughly circular and probably represent the earliest form of the disease. Some of these lesions remain static for years without any clinical implication. Careful palpation of the lesion will usually reveal one, several or occasionally many tiny nodules in the skin of the affected area. The skin may also feel slightly thickened and lacking in its normal elasticity. Histopathological study

helps in identification and differentiation of sarcoid from other skin problems. Therefore, single prick biopsy is recommended. Hence, the present study was carried out to study histopathology of sarcoidtumour.

Materials and Methods

The study was conducted on 8 clinical cases of equine having problem of sarcoid tumour which included 6 horses (Fig-1) and 2 mules. The age of the animals ranged from 2.5 to 12 years. The details of these cases are shown in the table 1. The sarcoid growth was removed by surgical intervention under anaesthesia of xylazine and ketamine at the dose rate of 1mg and 2mg per kg body weight respectively through intravenous route. Post- operatively, Vincristine sulphate was intravenously administered along with supportive therapy. Vincristine sulphate was given at the rate of 0.025 mg/kg body weight intravenously at weekly intervals for 2 to 4 times.

The supportive therapy included administration of vitamin C and vitamin B-complex @10 ml intramuscularly each for seven days. The dressing of surgical wound was done daily till the removal of skin sutures.

The cases were followed till complete recovery. A portion of the affected tissue was collected and sent for histopatholoogical examination.

Results and Discussion

Therapeutic efficacy of vincristine sulphate was found to be 75% as recurrence was seen only in two cases of malignant form of sarcoid and the rest recovered without any recurrence.

Histopathological examination

This histopathological technique involved fixation, washing, dehydration, clearing, embedding, and section cutting, staining and microscopical examination. Histopathologically, there was proliferation of dermal component i.e. fibroblasts in these cases. Among the eight cases, three suffered from fibroma, 2 from granulation tissue with excessive proliferation of fibrous tissue and one from squamous cell carcinoma. The biopsy samples of the remaining two cases were not available for histopathological examination. The detailed histopathological description of these cases is shown in table 2.

Granulation tissue

The granulation tissue is characterized by proliferation of fibrous tissue along with blood vessels and inflammatory cells (Fig. 2a).

Table.1 Description of cases of sarcoid in equine

Sr. no.	Animal species	Sample ID	Age (years)	Sex	Site of collection
1	Horse	Field case 1	6.5	M	Above eye
2	Horse	4-9218	5.5	M	Auxillary
3	Horse	10-3026	5	F	Gaskin
4	Horse	7-929	2.5	F	Vulvar lips
5	Horse	4-8670	5	F	Elbow
6	Horse	4-8367	5	M	Face
7	Mule	3-8281	12	F	Chest
8	Mule	4-8708	1.5	F	Thigh

Table.2 Diagnosis based on histopathological findings of sarcoids in equine

Sr. no.	Animal species	Sample ID	Histopathological finding
1.	Horse	Field case 1	Not done
2.	Horse	4-9218	Granulation tissue with excessive fibrous tissue proliferation
3.	Horse	10-3026	Fibroma
4.	Horse	7-929	Granulation tissue with excessive fibrous tissue proliferation
5.	Horse	4-8670	Fibroma
6.	Horse	4-8367	Squamous cell carcinoma
7.	Mule	Field case 2	Not done
8.	Mule	4-8708	Fibroma

Fig.1 Gross appearance of sarcoid cases in horses

1a. 

1b. 

1c. 

Fig.2a (x200): Photomicrograph of equine tissue sample suffering from sarcoid condition showing granulation tissue characterized by proliferation of fibrous tissue along with blood vessels and inflammatory cells. (H & E stain)

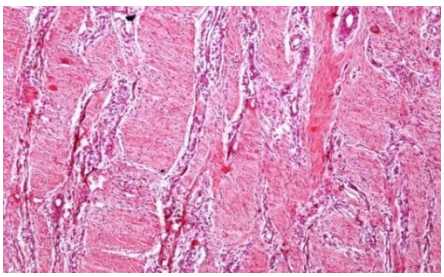


Fig.2b (x200): Photomicrograph of equine tissue sample suffering from sarcoid at higher magnification showing aggregates of pleomorphic neoplastic epithelial cells with hyperchromatic nuclei and high nucleus cytoplasm ratio (H & E stain).

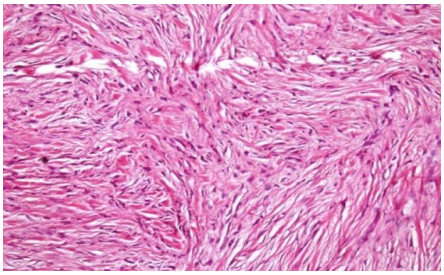
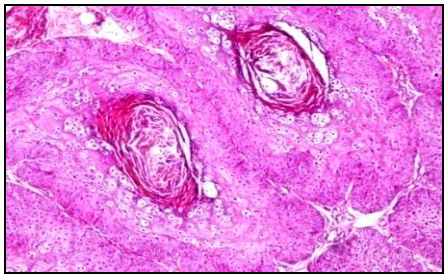


Fig.2c (x200): Photomicrograph of equine tissue sample showing neoplastic aggregates of pleomorphic epithelial cells with keratinized pearl formation. (H & E stain)



Fibroma

The fibroma is characterized by whorls or interlacing bundles of fibrous connective tissue which run in all directions (Fibroblasts and Collagen fibers). (Fig. 2b).

Squamous cell carcinoma

It is characterized by neoplastic aggregates of pleomorphic epithelial cells with keratinized pearl formation (Fig. 2c).

Equine sarcoids have been described as biphasic tumour with dermal and epidermal components.

Sections obtained from whole tumours allow for the most accurate histopathological assessment. Histopathologically the cases revealed fibroma, squamous cell carcinoma and granulation tissue with excessive fibrous tissue proliferation and almost in all cases there was increased density of dermal fibroblast. These findings are in accordance with earlier reports which suggested the presence of BPV-DNA and an increased density of dermal fibroblasts (Martens *et al.*, 2000). Jones *et al.,* (1996) suggested that all connective tissue tumours (fibroma, fibrosarcoma, neurofibroma) in horse are forms of equine sarcoids. The most commonly occurring neoplasms were the equine sarcoid, papilloma and squamous cell carcinoma of the eye and external genitallia. On histological examination, there is no dermal component. In present study histopathologically showed epidermal component almost normal with slight amount of granulation tissue and similar findings were observed by Goodrich *et al.,* (1998) and Martens *et al.,* (2000). Occasionally the epidermal component can be normal, atrophic or even absent (Marti *et al.,* 1993; Lepage *et al.,* 1998 and Martens *et al.,* 2000). In cases of fibroblastic and malignant sarcoid, changes

were observed more in dermal component consisting of bundles of irregularly arranged fibroblasts and variable amount of collagen. Typical changes include dermal proliferation of fusiform or spindle-shaped fibroblasts, forming whorls, interlacing bundles and haphazard arrays with one another (Goodrich *et al.,* 1998). Fibroblast morphology varies from slender with elongated, pointed nuclei, to plump cells with large, irregular nuclei. The cytoplasmic boundaries are often ill-defined. Fibroblasts are usually spindle-shaped with oval, elongated nuclei, and the mitotic rate may be increased in rapidly growing tumours (Ragland *et al.,* 1970) and in superficial or ulcerated parts (Tarwid *et al.,* 1985). In spite of the disorder, fibroblasts are normally differentiated, and the anaplasia typical of more aggressive sarcomas is rarely found (Jackson, 1936 and Tarwid *et al.,* 1985).

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