

Clinicopathological evaluation of cutaneous fibroma in horses

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ABSTRACT

Cutaneous fibroma is a benign neoplasm of fibrous connective tissue that is occasionally encountered in horses often presenting as nodular growths on various body regions. The present study was conducted over a period of one year to evaluate the prevalence, haematological, biochemical and histopathological characteristics of cutaneous fibroma in horses maintained at the Bihar Police Academy, Rajgir. A total of 32 horses were examined, out of which 6 cases were diagnosed with fibroma, indicating a prevalence of 18.75%. The affected horses included both sexes with ages ranging from 16 to 18 years suggesting a higher occurrence in older animals. Clinically, the lesions were observed as solitary or multiple nodular, ulcerated and proliferative masses predominantly located on the lateral body wall involving the paralumbar (flank) and gluteal (rump) regions. The nodular masses were surgically excised under aseptic conditions and the excised tissues were subsequently submitted for histopathological examination. Haematological evaluation revealed mild anaemia, leucocytosis and neutrophilia, indicative of chronic inflammatory response while biochemical analysis showed slight elevation in liver enzymes (ALT and AST) along with increased total protein and globulin levels. Histopathological examination confirmed the diagnosis of fibroma, characterized by dense interlacing bundles of well-differentiated fibroblasts and collagen fibres with minimal cellular atypia and low mitotic activity. These findings indicate that cutaneous fibroma, although benign can occur with appreciable frequency in aged horses and may be associated with mild systemic alterations. This study emphasizes the importance of surgical excision followed by histopathological confirmation for accurate diagnosis and effective management of cutaneous fibroma in horses.

Keywords: Cutaneous Fibroma, Horse, Surgical excision

INTRODUCTION

Cutaneous fibroma is a benign mesenchymal neoplasm arising from fibroblasts of the dermis and subcutis and is characterized by slow-growing, well-circumscribed nodular masses in various animal species including horses^{1,2}. In equines, fibromas are relatively uncommon compared to other skin tumours such as sarcoids, papillomas and squamous cell carcinoma; however, they remain an important differential diagnosis for nodular cutaneous lesions^{3,4}. These tumours are generally non-invasive and non-metastatic but may cause discomfort, ulceration or interference with movement depending on their size and anatomical location⁵.

In horses, cutaneous neoplasms are frequently encountered in regions subjected to repeated trauma, friction or environmental exposure. Fibromas have been reported on the head, neck, trunk and limbs, with occasional occurrence over the flank and gluteal regions^{6,7}. Although the exact etiology remains unclear, chronic irritation, wound healing disturbances and fibroblastic proliferation have been suggested as contributing factors^{8,9}. Unlike equine sarcoids, fibromas are not typically associated with papillomavirus infection and exhibit a more uniform and benign biological behaviour².

Clinically, fibromas present as solitary or multiple firm nodular masses that may be pedunculated or sessile and occasionally ulcerated due to trauma or secondary infection^{3,10}. Larger lesions may undergo surface necrosis and become prone to contamination leading to chronic inflammatory changes. Such lesions are often mistaken for sarcoids or exuberant granulation tissue, necessitating

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confirmatory diagnosis through histopathological examination^{4,5}.

Haematological and biochemical alterations in affected horses are usually mild but may reflect chronic inflammation, secondary infection or stress responses associated with long-standing lesions⁶. Histopathologically, fibromas are characterized by dense interwoven bundles of well-differentiated fibroblasts embedded in abundant collagen matrix with minimal cellular atypia and low mitotic activity, confirming their benign nature^{1,2}.

Although fibromas are considered sporadic in occurrence, studies documenting their prevalence and clinicopathological features in organized equine populations are limited, particularly in India. Institutional settings such as mounted police units provide a unique opportunity to evaluate such conditions due to uniform management and prolonged exposure of animals to similar environmental factors.

Therefore, the present study was undertaken to investigate the prevalence, anatomical distribution, age and sex predisposition along with haematological, biochemical and histopathological characteristics of cutaneous fibroma in horses maintained at the Bihar Police Academy, Rajgir. The findings aim to contribute to better understanding, accurate diagnosis and differentiation of fibroma from other cutaneous lesions in equine clinical practice.

MATERIALS AND METHODS

The present study was conducted on thoroughbred and Kathiawari horses maintained at the Bihar Police Academy, Rajgir (Nalanda), Bihar, over a period of one year to investigate the occurrence and clinicopathological characteristics of cutaneous fibroma. A total of 32 horses of different ages and sexes were examined under uniform management conditions. Out of these, 6 horses were selected for the study based on the presence of nodular cutaneous growths which were subsequently confirmed as fibroma upon histopathological examination.

The affected horses were presented with a history of slow-growing nodular masses on different parts of the body, particularly over the left lateral body wall involving the paralumbar (flank) and gluteal (rump) regions. The duration of growth as reported by caretakers ranged from 2 months to 10 months. In some cases, the lesions showed ulceration, surface necrosis and occasional bleeding likely due to repeated trauma or friction. No significant systemic clinical signs such as anorexia or depression were consistently observed.

On clinical examination, horses were generally alert and in fair body condition. The nodular lesions were firm, well-circumscribed, sessile or pedunculated, varying in size from approximately 3 cm to 10 cm in diameter. Some lesions exhibited ulceration and serosanguinous exudation. Vital parameters including rectal temperature, pulse rate and respiration rate were within normal physiological limits in most cases.

For diagnostic evaluation, haematological and biochemical analyses were carried out following standard procedures. Blood samples were collected aseptically from the jugular vein into EDTA and plain vacutainers. Haematological parameters evaluated included haemoglobin (Hb), packed cell volume (PCV),

total erythrocyte count (TEC), total leukocyte count (TLC) and differential leukocyte count (DLC). Biochemical parameters included alanine aminotransferase (ALT), aspartate aminotransferase (AST), alkaline phosphatase (ALP), total protein, albumin, globulin, blood urea nitrogen (BUN) and creatinine which were estimated using an automatic biochemical analyser.

For confirmatory diagnosis, the nodular masses were surgically excised under sedation and local anaesthesia. Horses were sedated using xylazine (1.1 mg/kg body weight, i.v.) and local infiltration of 2% lignocaine hydrochloride was administered around the lesion. The surgical site was prepared aseptically and a careful incision was made to excise the mass completely. Haemostasis was achieved by ligation of bleeding vessels and the wound was closed using appropriate suture materials.

The excised tissue samples were immediately fixed in 10% neutral buffered formalin and submitted to the Department of Veterinary Pathology, Bihar Veterinary College, BASU, Patna for further evaluation. Gross examination of the masses was carried out to assess size, shape, colour, consistency and presence of ulceration. For histopathology, tissues were processed by routine paraffin embedding technique, sectioned at 4–5 μ m thickness and stained with Haematoxylin and Eosin (H&E) for microscopic examination.

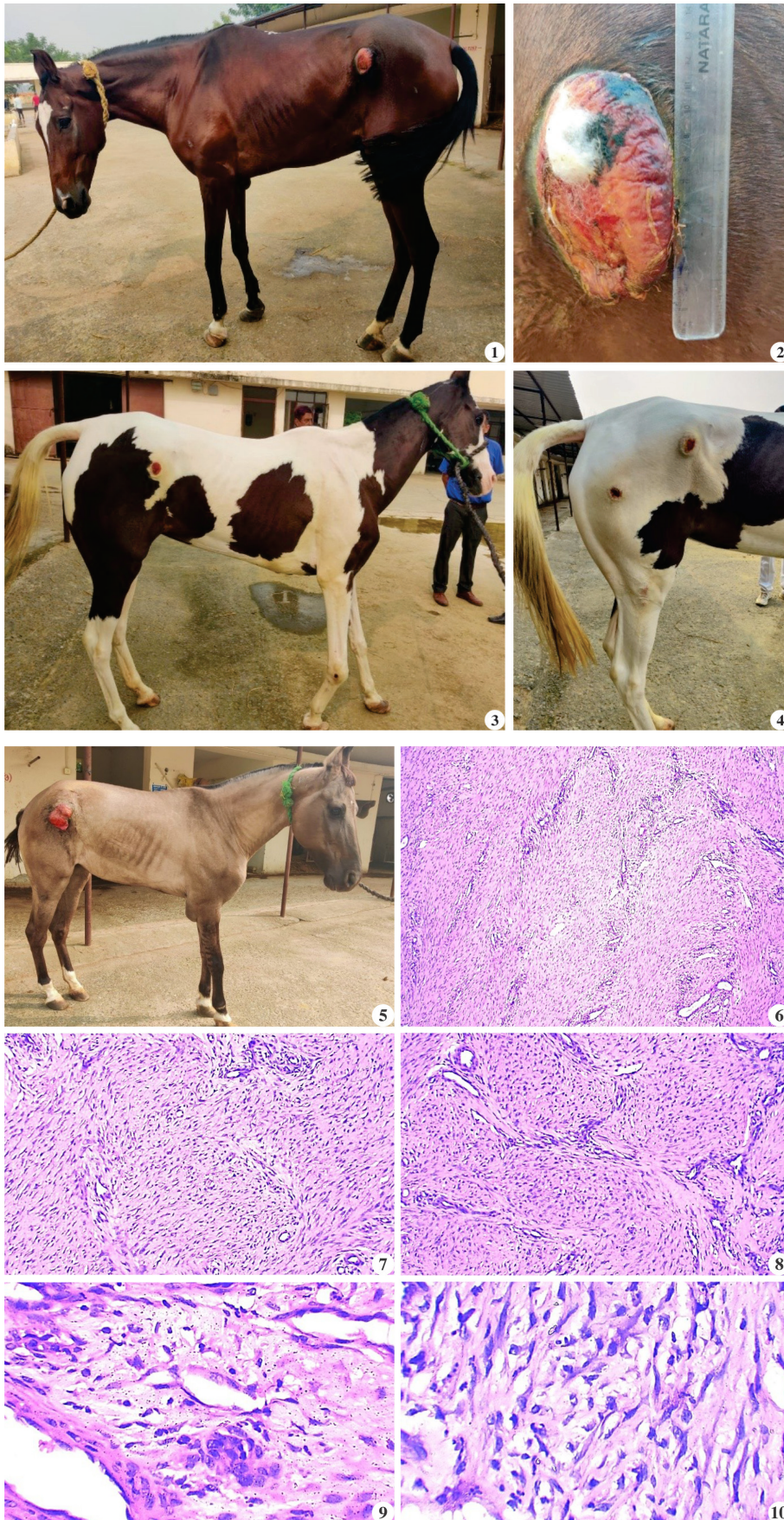
Postoperative management included administration of broad-spectrum antibiotics (Ceftriaxone @ 20–25 mg/kg, i.m.) for 5 days and non-steroidal anti-inflammatory drugs (meloxicam @ 0.2 mg/kg, i.m.) for 3 days. The surgical site was dressed regularly with antiseptic solution, and sutures were removed after 10–14 days.

All procedures were carried out in accordance with standard animal welfare practices.

RESULTS AND DISCUSSION

All affected horses recovered uneventfully following surgical excision of the nodular masses. The animals resumed normal feeding and activity within 4–8 days post-surgery. The surgical wounds healed satisfactorily and sutures were removed between 10–14 days without any complications. On follow-up examination after two months, no recurrence of the lesions was observed, indicating a favourable prognosis and effectiveness of complete surgical excision in the management of fibroma.

Grossly, the lesions were observed as nodular, ulcerated cutaneous masses located predominantly on the lateral body wall, including the paralumbar (flank) and gluteal (rump) regions (Fig. 1–5). The growths varied from solitary to multiple, with some appearing as small discrete nodules while others formed



large proliferative masses (Fig. 1, 3–5). Close examination revealed ulcerated surfaces with areas of haemorrhage and necrosis, likely due to repeated trauma (Fig. 2, 4, 5). The excised masses were well-circumscribed, firm to hard in consistency and varied from 3 cm to 10 cm in diameter. On cut section, the masses appeared whitish to grayish-white with a homogeneous fibrous texture. The distribution of lesions, predominantly over the flank and gluteal regions, suggests a possible association with mechanical irritation or pressure in these areas.

Histopathologically, the tumour sections at low magnification (H&E, x4) revealed dense interlacing bundles of collagen fibres with spindle-shaped fibroblasts (Fig. 6). At higher

Fig. 1. Gross appearance of a nodular, ulcerated cutaneous mass located on the left paralumbar (flank) region of a horse; **Fig. 2.** Close-up view of ulcerated nodular growth (~9 – 10cm) on the left flank of a horse; **Fig. 3.** Lateral view of a horse showing a solitary nodular lesion on the right paralumbar (flank) region; **Fig. 4.** Clinical photograph showing multiple ulcerated nodular lesions on the left gluteal (rump) region of a horse; **Fig. 5.** Clinical photograph showing a large ulcerated nodular mass on the left gluteal (rump) region of a horse; **Fig. 6.** Histological section of cutaneous fibroma (H&E, x4) showing dense interlacing bundles of collagen fibers with spindle-shaped fibroblasts; **Fig. 7.** Histological section of cutaneous fibroma (H&E, x10) revealing well-differentiated fibroblasts with elongated nuclei embedded in dense collagenous stroma; **Fig. 8.** Histological section of cutaneous fibroma (H&E, x10) showing spindle-shaped fibroblasts arranged in a criss-cross pattern with abundant collagen deposition; **Fig. 9.** Histological section of cutaneous fibroma (H&E, x40) showing spindle-shaped fibroblasts embedded in collagen fibres along with occasional giant tumour cells; **Fig. 10.** Histological section of cutaneous fibroma (H&E, x40) exhibiting mild nuclear pleomorphism and occasional multinucleated giant cells embedded in dense collagen fibres.

magnification (H&E, x10), the lesion showed well-differentiated fibroblasts with elongated nuclei embedded in a dense collagenous stroma (Fig. 7), with areas demonstrating a criss-cross (interlacing) arrangement of fibroblasts and abundant collagen deposition (Fig. 8). On further magnification (H&E, x40), the fibroblasts were seen embedded within collagen fibres along with occasional giant tumour cells (Fig. 9) and exhibited mild nuclear pleomorphism with occasional multinucleated giant cells (Fig. 10). Overall, the fibroblasts were spindle-shaped with minimal cellular atypia and low mitotic activity. The overlying epidermis was intact in some areas while in ulcerated lesions it was disrupted and replaced by necrotic debris. Mild lymphoplasmacytic infiltration was observed in the stroma, indicating a chronic inflammatory response. Based on these features, the lesions were diagnosed as cutaneous fibroma.

Cutaneous fibroma is considered a benign tumour of fibroblastic origin and is reported less frequently in horses compared to sarcoids and other cutaneous neoplasms^{1,7}. In the present study, 6 out of 32 horses (18.75%) were affected, indicating a moderate occurrence within the studied population. The affected animals were predominantly older (16–18 years and above) which is in agreement with previous reports suggesting a higher incidence of fibrous tumours in aged animals due to prolonged exposure to environmental and mechanical factors^{9,11}.

The histopathological features observed in the present study, including well-differentiated fibroblasts, abundant collagen deposition and minimal atypia are in accordance with previous descriptions of fibroma in equines^{1,7}. The absence of cellular pleomorphism, high mitotic activity and invasive growth pattern differentiates fibroma from malignant fibrosarcoma and other aggressive mesenchymal tumours. Furthermore, differentiation from equine sarcoid is essential, as sarcoids typically exhibit epidermal hyperplasia and fibroblastic proliferation associated with papillomavirus infection, which were not observed in the present cases^{5,9}.

The favourable clinical outcome, absence of recurrence and benign histological features confirm that cutaneous fibroma in horses has an excellent prognosis following complete surgical excision. The findings emphasize the importance of histopathological examination for definitive diagnosis, as clinical appearance alone may mimic other proliferative lesions.

CONCLUSION

Cutaneous fibroma in horses is a benign tumour predominantly affecting older animals, commonly observed in the paralumbar and gluteal regions. Although non-invasive, lesions may ulcerate due to

trauma. Accurate diagnosis through histopathology is essential to differentiate it from other cutaneous tumours. Surgical excision provides an excellent prognosis with no recurrence. Early detection and proper management are important for maintaining animal welfare.

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