Iranian Veterinary Surgery Association

Iranian Journal of Veterinary Surgery

Journal homepage: www.ivsajournals.com

Clinical Report

Clinical and Histopathological Diagnosis of Synovial Pad Proliferation in a Racehorse

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ARTICLE INFO

Article History:

Received 3 February 2023
Revised 28 February 2023
Accepted 5 April 2023
Online 5 April 2023

Keywords:

Synovial lesion
Lameness
Horse
Radiology
Histopathology

ABSTRACT

Synovial pad proliferation that origins from a soft tissue observes in the fetlock joint of horses, mainly racing horses. In the present study, we report the clinical and histopathological findings of synovial pad proliferation in a 15-years-old male horse with mild lameness. A palpable and visible mass was found at the dorsolateral surface of the right hindlimb joint associated with ulcer and hemorrhage. The radiology examination and biopsy sample were performed for the present case. In radiology, there was not exostosis or a bone fraction. Histopathology dominantly demonstrated densely collagenous, fibrous connective tissue and vascular congestion to gather with mild chronic inflammation and fibrosis. No evidence of edema and acute inflammation were found on the tissue sections. The surgical removal of the proliferative mass was suggested for the treatment of choice for optimal recovery.

Introduction

Synovial pad proliferation is a pathological condition that origins from soft tissue and observes in the fetlock joint of horses, particularly racing horses. In most cases, the pathological mass is unilateral,[1] particularly in the metacarpophalangeal joint, which was formerly known as chronic proliferative or villonodular synovitis.[2,3] It frequently occurs without a clear initiating factor are similarly because of hyperextension of the joint and affect physical trauma to the normal synovial plica. This damage can lead to lameness that depends on the underlying disease.[4]

In histopathology, the lesion in horses is distinguished by fibrous and connective tissue proliferation along the edge of the synovial pad and nodule (mass) formation within the normal fibrous tissue.[5] The presented nodules include proliferating fibrous tissue with enhanced vascularity and enriched fibroblasts. Also, chronic cases may represent collagen necrosis, chondroid metaplasia, and dystrophic calcification, but no evidence of hemosiderosis, acute inflammation, or multinucleated giant cells have not been reported.[6]

According to the authoŕ s knowledge, it seems that the similar pathological lesions (metacarpophalangeal

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https://doi.org/10.30500/ivsa.2023.384391.1332

synovial pad proliferation) were previously proposed in Thoroughbreds horses.[2,7] However, the results of another study indicated that 36% of the affected horses were Standardbreds, which demonstrated that the pathological condition could occur routinely in other breeds.[8] Up to now, it is now well recognized that surgical removal of the palpable mass is the choice treatment for optimal recovery to normal function. In the present study, we report the clinical and histopathological findings of synovial pad proliferation in a 15-year-old male horse.

Case Description

In September 2020, a 15-year-old male horse was referred to the University of Tabriz, Veterinary Hospital (Tabriz, Iran) with mild lameness, which was notable in walking and trotting. In the gross examination, a palpable and visible mass was found at the dorsolateral surface of the fetlock joint of right hind-limb associated with a history of chronic ulcer and hemorrhage (Figure 1A). At first, the radiology examination was performed by a portable conventional X-Ray generator (Mobile Drive AR30, Smam, Italy) for the present case. Then, the biopsy sample was taken surgically from the lesion, which was fixed in the neutral buffered formalin (10%), passaged routinely, embedded by paraffin, sectioned, stained using hematoxylin-eosin (H&E), and finally, studied by a light microscope (Olympus, Japan). The surgical removal of the lesion was suggested for the choice treatment for optimal recovery.

Treatment and Outcome

As previously described, a visible and palpable mass was observed at the fetlock of hind-limb associated with a mild and superficial chronic ulcer and hemorrhage (Figure 1A). In radiology, there was not exostosis or a bone fraction. A mild periosteal reaction was found in radiograph (dorsolateral surface), apparently resulting from cortical bone reaction to the trauma primarily due to the exercising and racing. However, a secondary local infection also presented in the affected limb. Arthritic conditions was not seen in the adjacent joint (Figure 1B). Histopathology consistently revealed vascular congestion, densely collagenous, fibrous connective tissue associated with chronic fibrosis (Figure 1C). No evidence of edema and acute inflammation were found on the tissue sections. It seems that the surgical removal of the lesion has been successful, which was observed grossly after six months.

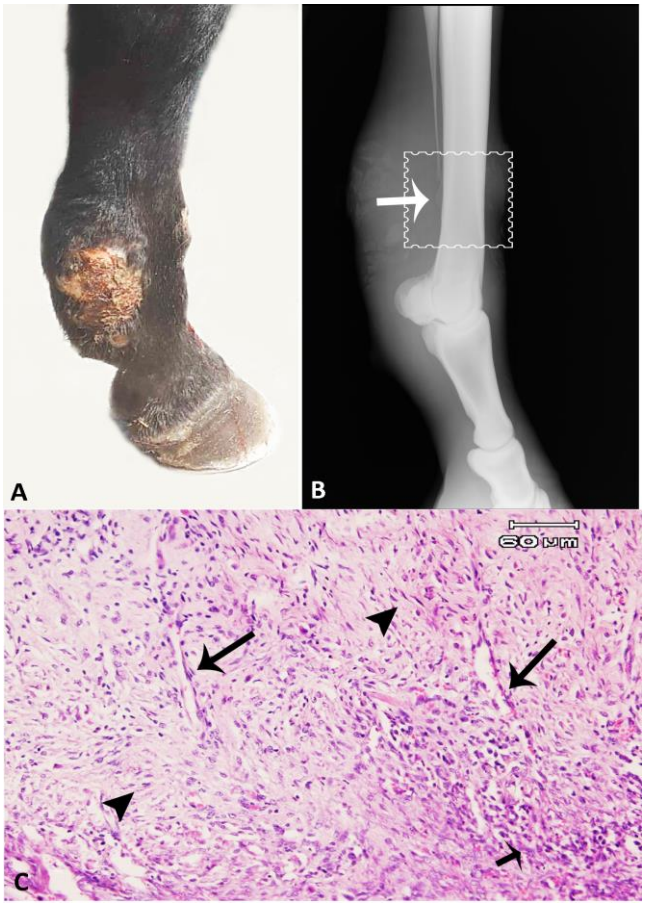

Figure 1. Synovial pad proliferation in a racehorse. **A**: a visible and palpable mass was observed at the dorsolateral surface of the fetlock of right hind-limb associated with a mild and superficial chronic ulcer and hemorrhage. **B:** A mild periosteal reaction (square) can be seen in radiograph (dorsolateral surface), apparently resulting from cortical bone reaction (arrow) to the trauma and probable secondary infection. Arthritic conditions cannot be seen in the adjacent joint. **C:** Histopathology consistently revealed vascular formation (long arrows), densely collagenous (arrow heads), fibrous connective tissue associated with mild chronic inflammation (short arrow). H&E.

Clinical Relevance

The synovial pad of the fetlock joint is a fold (plica) of fibrous connective tissue in the dorsal surface of the joint capsule at its attachment to the canon bone. The lesion is caused by enlargement of the plica due to chronic injury.[2,4,9] It is proposed that it frequently occurs due to osteochondral fractures of the dorsal proximal phalanx, which are not frequently treated by fragment removal immediately. Growing evidence suggests that poor conformation and excessive training of racehorses at a young age no doubt contribute to the development of the pathological condition in this and other joints.[9] Besides, it was reported that degenerative joint disease (DJD) could secondarily lead to the

development of the lesions, which are mostly more significant and more chronic. As previously mentioned, masses that happen without a clear initiating factor are similar because of hyperextension of the affected joint and physical trauma to the normal synovial fold. Regarding the present case was a racing horse, we think the joint and synovial membrane could chronically damage during the exercises. It was previously reported that the mass is usually pedunculated and rubbery, and the color varies from tan to red-brown, related to the age of the lesion and the degree of congestion and hemorrhage.[6] Here, the color of the lesion was brown to gather with a mild chronic ulcer and hemorrhage. It seems that herein the chronic ulcer may be due to the some traditional treatments.

In the present case, the definitive diagnosis of the lesion was performed throughout the histopathology method, which is consistent with the previous description.[6] The histopathology of this lesion relates to its age. As more details, acute stages may contain hemorrhage, hemosiderosis, and granulation tissue. In the subacute lesions, they consist of hemosiderophages and well-organized granulation tissue. And chronic lesions contain a dense, poorly vascularized fibrous tissue associated with mononuclear inflammatory cells infiltration, which may cover by a layer of synoviocytes and also be ulcerated yet.[6,10]

It was demonstrated that the surgical removal of the proliferative mass and osteochondral fragment (may be present) commonly improves the lameness. However, if the proliferative mass is because of DJD, the prognosis for relapse to soundness is more guarded.[2,4] Here, the surgical removal of the lesion was conducted for the treatment of choice for optimal recovery. It seems that it has been successful, which was observed grossly after six months.

Conflict of Interest

None.

Acknowledgment

The authors are grateful to the Faculty of Veterinary Medicine, University of Tabriz, Tabriz, Iran.

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