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Radiographic and Ultrasonographic Findings of Some Fetlock Disorders in Donkeys

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Abstract

Objective- To describe the radiographic and ultrasonographic changes in the fetlock disorders indonkeys.
Design- Descriptive study.
Animals- - Twenty nine donkeys with clinical, radiographic and ultrasonographic evidences of fetlock disorders and lameness were used in this study.
Procedures- Clinical, radiographic and ultrasonographic studies for donkeys have fetlock disorders and lameness were evaluated. Five radiographic views were performed and evaluated. Transverse and longitudinal scans of the palmar/planter fetlock region were obtained. The radiographic and ultrasonographic findings were studied and correlated with clinical signs.
Results- All donkeys had marked painful fetlock swelling and lameness. Radiography showed chronic tendonitis with soft tissue calcification. Sesamoiditis with osteophytes formation and osteolysis were detected.. Transverse mid body and lateral abaxial fractures of the proximal sesamoid bones were diagnosed. Thickening and adhesions with increased in echogenicity of the digital flexor tendons were observed. Desmitis of both lateral and medial branches of the suspensory ligaments with thickening, fibrosis were seen.
Mechanical trauma, over work long hours in harsh condition, over strain, neglected hoof care and management might be attributed to hard and soft tissue changes and fetlock disorders in the donkeys.
Conclusion and Clinical Relevance- Radiography and ultrasonography evaluation of fetlock lameness in donkeys provides a useful aid in delectating the pathological changes in hard and soft fetlock tissues in donkeys.
Key Words- Donkey, Fetlock Disorders, Suspensory Ligament Desmitis, Chronic Tendonitis, Proximal Sesamoid Bone Fractures.

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Introduction

Donkeys have been employed as working animals and played an important role in the provision of energy for agriculture production over 5,000 years. The world population of donkeys have ranged to 44 millions and have tendency to increase.[1] Little is known about surgical affections among donkeys. Laminitis, chronic pedal bone sepsis, sarcoids and colic were the more surgical affections described.[2] Diseases of the fetlock region in the horse have been studied both radiographically[3] and ultrasonographically.[4,5]

Donkeys are considered the main draught animals among equine in Egypt. Yet it is subjected to overuse and neglected hoof care. The incidence of donkey lameness in the surgery clinic was represented 39.6%. In addition, the incidences of fetlock joint and tendon disorders among other affections causing lameness were 36.4% and 48.8% respectively.[6]

Recently, ultrasonographic has allowed better definition of injuries to fetlock soft tissues in the horse. Relatively little studies have been done to study the tendons and ligaments in the donkey fetlock region ultrasonographically. The aim of this study was to describe the radiographic and ultrasonographic findings of some fetlock disorders in donkeys.

Materials and Methods

Twenty nine donkeys (19 males and 10 females) ranging in age from 2 to 9 years (mean 5 years) and body weight from 150 to 350 kg. (Mean of 250 kg) were referred to the surgery clinic for investigation of fetlock lameness. These donkeys were used for draught pulling of the cart. The duration of clinical signs of lameness prior to the presentation was 3 to 60 days. The severity of lameness was graded on a scale from 1 to 5 grades.[7] The fetlock region was examined thorough palpation or fetlock flexion test. Any painful response to fetlock manipulation was recorded.

Radiography was performed upon admission in all cases using mobile X-ray machine (Fischer). The radiographic setting factors ranged from 45 to 55 kvp, 10 mAs and 90 cm FFD. Each radiographic examination was comprised of 5 projections, dorso-palmar/planter, latero-medial, flexed latero-medial, lateral oblique and medial oblique projections.

Ultrasononography was performed upon admission in all cases after clipping, shaving and applied a couple gel over the fetlock region. Ultrasonographic examination of the palmar/planter aspect of the fetlock soft tissue structures was performed using a 7 MHz micro convex transducer with and without stand off pad. (Just vision 200, Toshiba). Transverse and longitudinal images were obtained. The fetlock soft tissue structures were examined ultrasonographically from the proximal sesamoid bones till the mid of the first phalanx. The contra lateral limb was also obtained for comparison study

Results

The findings of the clinical and radiographic examinations showed that chronic tendonitis was diagnosed in 14 cases, fractures of the proximal sesamoid bones in 10 animals and sesamoiditis in 5 cases. The palmar/planter aspects of the fetlock joint were diffusely swollen, painful and a sort of hotness was detected. Some animals were non weight bearing on the affected limb at the time of presentation. Chronic tendonitis showed enlargement and thickening of the superficial (SDFT) and deep (DDFT) flexor tendons with no discrimination between them. Fetlock flexion test exacerbated lameness. Radiographic changes have soft

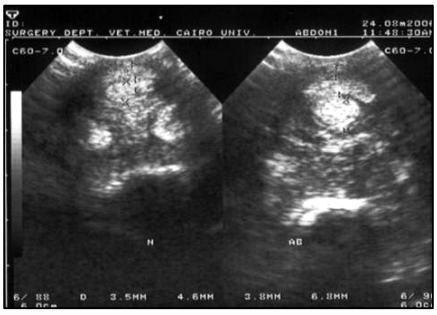

Figure 1. Transverse ultrasonographic image of the palmar aspect of the left fore limb fetlock at 5 year old she donkey with chronic tendonitis. (B) There is enlarged, hyperechoic associated with hyperechoic adhesions between the SDFT and the DDFT (Arrow). The dorsopalmar dimension of the SDFT was 3.8 mm and the DDFT was 6.8 mm. (A) the normal palmar aspect of contra-lateral fetlock. The dimension of the SDFT was 3.5 mm and the DDFT was 4.6 mm.

tissue thickening with calcification at the palmar/planter aspects of the metacarpal/metatarsal and the proximo-dorsal aspect of the proximal phalanx were detected in chronic tendonitis.

The ultrasound imaging showed enlargement and adhesion between of the SDFT and DDFT (Fig 1). Desmitis of the medial and lateral suspensory ligament branches were identified. The medial suspensory ligament branch had hyperechoic fibrous layer around the branch. In addition, the lateral branch appeared enlarged with decreased in echogenicity and presence of anechoic areas within the branch (Fig 2).

Sesamoiditis of the proximal sesamoid bones were encountered in the hind limbs of 5 cases. Radiographic abnormalities included new bone proliferation in 3 cases and osteolytic changes at abaxial border of the sesamoid bones in two cases. Ultrasonographic scans of suspensory ligaments showing desmitis and enlargement of the branches with irregularities in its contour. The lateral suspensory ligament had desmitis with cleft like tear or crescentric anechoic lesion associated with sesamoiditis (Fig.4).

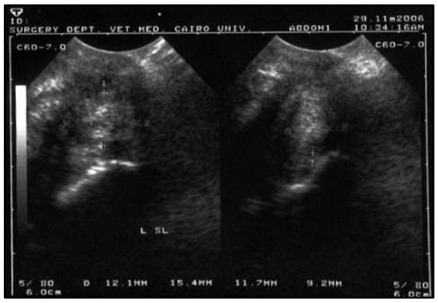

Figure 2. Transverse ultrasonographic image of the lateral (A) and medial (B) suspensory ligament branches desmitis at 8 year old male donkey with chronic tendonitis. (A) There is anechoic areas and decreased in echogenicity within the lateral branch. (B) There is hyperechoic fibrous layer around the medial branch (arrow)

The proximal sesamoid bones fractures were recorded in 10 cases and were attributed to traumatic kicking especially in the hind limbs or motor care accident in the fore limbs. Transverse mid body (Fig.5) and abaxial lateral sesamoid fractures (Fig. 6) were the main findings in the present study. These animals admitted with non weight bearing in the affected limb. The palmar/planter SDFT, DDFT and suspensory ligaments showed hard painful swelling at the fetlock region.

Ultrasonographic abnormalities included desmitis of both lateral and medial suspensory ligament branches associated with extensive hypoechoic region. Chronic cases of the

fractures, the suspensory ligament branches had fibrous hypoechoic adhesions with the surrounding tissues and calcification was detected.

Discussion

Figure 4. Transverse ultrasonographic image at 4 year old male donkey affected with sesamoiditis. There is a crescent or half moon an echoic lesion of the lateral suspensory ligament desmitis (arrow).

The fetlock region in equine has a fairly rich and somewhat a complex anatomy. These areas are common sites for a multiple injuries and lameness. Lameness of this area can be sometimes difficult to diagnosis. Ultrasonongraphy and radiography have become an integral part of equine lameness diagnosis.[5]

Chronic tendonitis, sesamoiditis and fractures of the proximal sesamoid bones were the more prominent conditions diagnosed. Chronic tendonitis represented (48.8%) among other tendon injuries in donkeys.[6] The too heavy loads carried by these draft donkeys, working on uneven or muddy roads in addition to neglected hoof care and management might be attributed to the increased incidence of chronic tendonitis in this investigation.

There is direct relationship between the shape of the hoof and the condition of the tendon.[6,8] The overgrown hoofs, boxy hoofs and curled out hoofs will disturb the normal foot axis and the dynamics of the affected foot resulting in chronic pathological changes at the supportive apparatus. Additionally, local micro vascular stasis at the fetlock joint capsules and the superficial digital flexor tendons were detected in overgrown hoofs in donkeys.[8] The decreased angle of the foot axis and increased in the length of the hoof wall at the toe played an important role in increased incidence of irreversible pathological and radiographic changes in the phalangeal region.[9] Consequently, soft tissue swelling and dystrophic calcification at the palmar/planter aspects of donkey fetlock region were observed.

The ultrasonographic evaluation of chronic tendonitis has been studied extensively in the horse.[5,10] Marked thickening, increased in size and presence of dystrophic calcification, associated with loss of normal structural integrity in digital flexor tendonitis in the horse were attributed to chronic inflammation and recovery. Therefore, overuse of these animals and neglected hoof care could be attributed to pathological changes seen.

The proximal sesamoid bones are part of the suspensory apparatus of the fetlock joint that prevents hyperextension during strenuous exercise. Increased tensile forces and direct trauma have been attributed to proximal sesamoid fractures.[7] The most sesamoidean body fractures in the horse occurred during fatigue and related to hypertension of the fetlock joint.[11] Therefore, transverse mid body fractures and abaxial lateral sesamoid fractures in donkeys could be attributed to mechanical trauma in the present study.

Soft tissue swelling, desmitis and preligamentous fibrosis with surrounding tissues have been detected in sesamoid bone fractures.[12] Sesamoiditis in the horses were related to mechanical factors or circulatory disturbances.[13] However, sesamoiditis in donkeys were mainly due to mechanical trauma. The ultrasonographic scans showed, desmitis, irregulatory in the contour and cleft like tear in the lateral suspensory branch. These findings in sesamoiditis suggested

excessive strain of the suspensory ligament branches at insertion around the fetlock including the sesamoid bones.[5]

Figure 5. Latero-medial projection of 3 year old male donkey. There is comminuted abaxial fracture of lateral sesamoid bone (arrow).

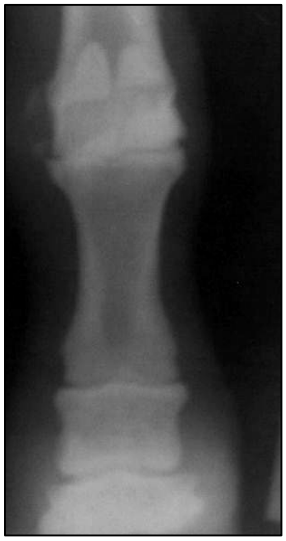

Figure 6. Dorso-palmar projection of 4 year old male donkey (left is medial) a basilar fracture (short arrow). In the lateral sesamoid bone there is a well defined transverse fracture line at the mid body of the bone (long arrow).

In conclusion, radiographic and ultrasononography studies proved to be valuable tools in diagnosis of fetlock disorders in donkeys. Chronic tendonitis, fractures of the proximal sesamoid bones and sesamoiditis associated with soft tissue changes were the most frequently conditions diagnosed. Over strain of tendinous and ligamentous structures associated with over work long hours in harsh condition, in addition to neglected hoof care and managements play an important role in donkey fetlock disorders.

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چیکده

مشاهدات رادیوگرافیک و اولتراسونوگرافیک برخی از اختلالات فتلاک در الاغ

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هدف: توصیف تغییرات رادیولوژی و اولتراسونوگرافی در بیماریهای مفصل فتلاک در الاغ

طرح مطالعه: مطالعه توصیفی

حیوانات: تعداد ۲۰ راس الاغ با بیماریهای مفصل فتلاک و لنگش و واجد نشانه‌های بالینی، رادیولوژی و اولتراسونوگرافی مورد مطالعه قرار گرفتند.

روش کار: ارزیابی بالینی، رادیولوژی و اولتراسونوگرافی در الاغ‌های مبتلا به بیماری‌های مفصل فتلاک و لنگش انجام قرار گرفت. رادیوگرافی در پنج نما انجام شد. در اولتراسونوگرافی، نماهای طولی و عرضی ناحیه کف دستی / کف پایی مفصل فتلاک گرفته شد. یافته-های رادیولوژی و اولتراسونوگرافی مورد مطالعه قرار گرفت و با علائم بالینی مرتبط بودند.

نتایج: همه الاغ‌ها، تورم مشخص در ناحیه مفصل فتلاک و لنگش را نشان می‌دادند. نشانه‌های رادیولوژی بیانگر التهاب مزمن تاندون همراه با کلسیفیکاسیون بافت نرم بود. التهاب استخوان‌های کنجدی فوقانی همراه با تشکیل اسئوفیت و استئولیز قابل مشاهده بود. شکستگی‌های ناحیه میانی و سطح غیر محوری جانبی استخوان‌های کنجدی فوقانی تشخیص داده شد. افزایش ضخامت و چسبندگی همراه با افزایش اکوژنیسیته تاندون‌های خم‌کننده انگشتان مشاهده گردید. التهاب هر دو شاخه رباط معلقه همراه با افزایش ضخامت و فیبروز قابل مشاهده بود.

ضربه فیزیکی، کار طولانی مدت در شرایط سخت، کشیدگی بیش‌ازحد و غفلت در مراقب سم می‌تواند باعث تغییرات در بافت نرم و سخت و بیماریهای مفصل فتلاک در الاغ گردد.

نتیجه گیری و کاربرد بالینی: ارزیابی رادیولوژی و اولتراسونوگرافی لنگش‌های مرتبط با مفصل فتلاک در الاغ، نتایج سودمندی را در رابطه با تغییرات بافت نرم و سخت مفصل فتلاک در الاغ فراهم می‌کند.

کلید واژگان: الاغ، بیماریهای فتلاک، التهاب لیگامان معلقه، التهاب مزمن تاندون، شکستگی استخوان کنجدی فوقانی.