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RADIOGRAPHIC VISUALIZATION OF THE FETLOCK JOINT IN DONKEYS
(With One Fig.)

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دراسة راديولوجية لمحفظة مفصل المعقم في الحمير

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من المعروف أن التشخيص الراديولوجي لبعض اصابات مفصل المعقم يعتمد على الصورة الراديولوجية الطبيعية له. لذلك أجريت هذه الدراسة على حمير سليمة لاظهار الصورة الطبيعية لمحفظة مفصل المعقم . ووجد أنها تتكون من خمسة جيوب تم توضيحها بالأشعة. ووجد أنها تتكون من خمسة جيوب وهي كالتالي: علوى خلفي ، علوى أمامي، سفلى أمامي، سفلى وسطي خلفي، وحشي خلفي وأنسى خلفي.

SUMMARY

Obviously, diagnostic interpretation of some affections of the fetlock joint depends on detailed and thorough knowledge of the normal arthrograph. Therefore, this study was intended to provide radiographic visualization of the full extent of the normal fetlock joint capsule in donkeys. The arthrographic study revealed the presence of proximal palmar (or plantar) sac, proximal dorsal sac, distal dorsal sac, distal mid-palmar (or plantar) sac and the paired medial and lateral palmar (or plantar) sacs.

INTRODUCTION

Survey radiography allows for interpretation of gross anatomic changes of osseous tissue, but does not provide accurate visualization of soft tissue structures. In arthrography, a contrast media of density other than water outlines the articular and capsular surfaces. Therefore, if the normal arthrographic anatomy is known, abnormalities may be recognized and differentially diagnosed.

Arthrography was divided into three types: Negative, positive and double contrast arthrography. In the negative contrast procedure, oxygen, air, carbon dioxide and nitrous oxide were used. In the positive contrast procedure, small quantities of

radiopaque media are introduced into the joint space, absorbable water soluble iodized preparations were used. In double contrast arthrography, both a negative and postive contrast media were used (ANDREN, 1960; DOUGLAS and WILLIAMSON, 1963 and CHIRLS, 1966).

Intra-articular injection of contrast media in the dog, to outline the extent of a joint capsule or to obtain visualization of interosseus ligaments, has been mentioned (GAY, 1957), but the value of their procedure has also been discounted (DOUGLAS and WILLIAMSON, 1963). VAN PELT (1962) has published contrast arthrograms of the fetlock of the horse at necropsy, using a mixture of a red neoprene latex compound and red oxide of lead as a contrast agent. A negative contrast procedure has been reported in tendon radiography in the horse (WILLIAMS and CAMPBEELL, 1961).

The aim of this work is to demonstrate the outlines of the fetlock joint capsule in donkey after introduction of positive contrast medium into the synovial fluid.

MATERIAL and METHODS

This study was conducted on 6 clinically healthy donkeys of both sexes aging 4-7 year-old and weighing 90-130 kg. Arthrography was performed in recumbent position in three donkeys and it was performed in the standing position in the rest of the animals.

Arthrocentesis was performed with an 18- gauge, 2.5 cm. disposable needle. Skin puncture was made between the third metacarpal, or metatarsal bone and the suspensory ligament. After the needle had penetrated the subcutaneous tissue, it was directed 45 degrees distally into the proximal palmar (or plantar) sac of the fetlock joint. Flexion of the fetlock joint opened the space between the articulating surfaces of the sesamoid bones and the third metacarpal, or metatarsal bone and therefore lessened the risk of joint damage by the needle. A 5 ml. glass syringe was then attached to the needle and the synovial fluid was gently aspirated. Gentle extension of the joint after the appearance of synovial fluid in the syringe facilitated collection. The needle was left in place while the syringe was detached.

Another syringe containing. 5 ml. of diluted urografin 57% was attached to the needle, the contents rapidly injected and the needle withdrawn. The joint was then flexed and extended several times.

In two donkeys the arthrographs were taken immediatley, 10 minutes and 20 minutes following introduction of the contrast media. In the rest of the animals the arthrographs were taken immediatley after injection. Four standard arthrographs were taken. These consisted of (1) anteroposterior, (2) anteroposterior proximo-distal oblique

(3) latero-medial, (4) lateromedial flexed. Sixety KV, 6 MA/S and 90 cm. FFD were used.

RESULTS

The described technique provided radiographic visualization of the full extent of the fetlock joint capsule (Fig. 1). The proximal palmar (or plantar) sac is single and extensively sacculated. The proximal dorsal sac is compressed against metacarpal (or metatarsal) III in flexion but not in extension. Other smaller visualized sacs include the distal dorsal sac, the distal mid-palmar (or plantar) sac and the paired medial and lateral palmar (or plantar) sacs.

All arthrographs which performed immediately or taken 10 minutes after injection, were satisfactory and those taken at 20 minutes, were unsatisfactory.

In 4 of 20 arthrographs (taken is standing position) demonstration of the medial and lateral sacs, were considered primarily unsatisfactory because delay in radiography.

Clinical examination following arthrography revealed very slight local elevation of temperature for not more than 24 hours, with no distention of the joint capsule.

DISCUSSION

The arthrographic study revealed that presence of proximal palmar (or plantar) sac, proximal dorsal sac, distal dorsal sac, distal mid-palmar (or plantar) sac and the paired medial and lateral palmar (or plantar) sac. These findings confirm the results reported by VAN PELT (1962) in horse.

Results of this study indicated that urografin is a safe contrast media for use in the donkey fetlock joint (FREIBERGER, et al. 1966). Radiographs should be made immediately or within 10 minutes after injection of urografin. If radiography was delayed, a definite loss of detail occurred due to diffusion of the water-souble contrast agent (CANNON, 1969).

Arthrography is not a substitute for survey radiography, but may be helpful in establishing a diagnosis, the indication for surgery and the prognosis of conditions such as articular cartilage erosions, ruptured joint capsule, non calcified loose bodies and in determining if subchondral bone cysts communicate with the joint cavity (JENNINGS, 1984). Diagnostic arthrography in the donkey may be useful because of the importance of joint disease in this species in that it may provide a method that will allow earlier accurate diagnosis even before gross osseous changes occur. Obviously, diagnostic interpretation depends on detailed and thorough knowledge of the normal arthrograph.

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LEGEND

Fig. (1): Normal radigraphic anatomy of donkeys fetlock shown by positive contrast arthrography.

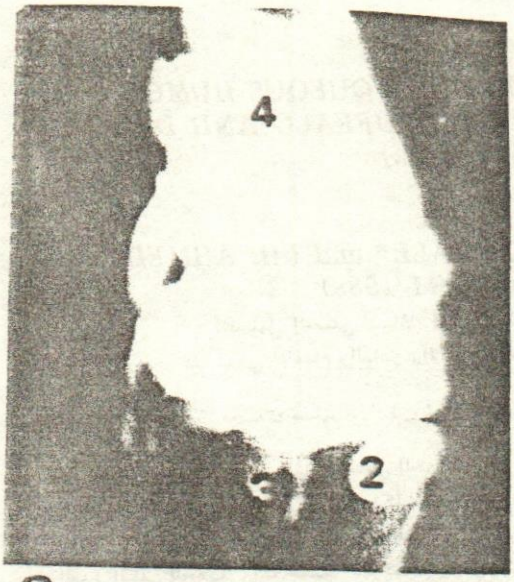
A and B Anteroposterior and oblique arthrograms visualizing,

1 - Medial palmar, or plantar, sac
2 - Lateral palmar or plantar, sac
3 - Distal Mid-palmar, or mid-planter sac.
4 - Proximal palmar or plantar, sac

C and D Lateromedial arthrographs; D with joint flexed.

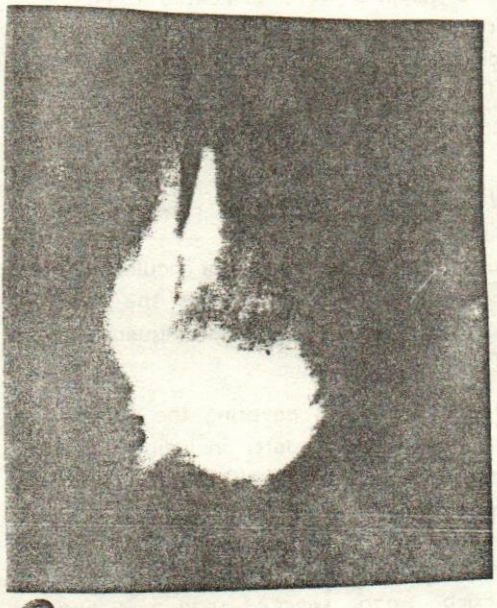
1 - Proximal dorsal sac.
2 - Distal dorsal sac.
3 - Lateral and medial palmar or plantar, sac.
4 - Proximal palmar, or plantar, sac.
5 - Distal mid-palmar, or mid-plantar, sac.

RADIOGRAPHIC VISUALIZATION OF THE FETLOCK



a

b



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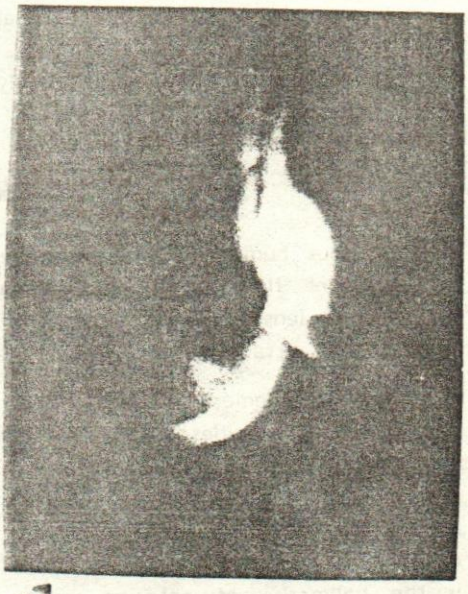

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