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DIGITAL ANGIOGRAPHY OF CAMEL FOOT

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ABSTRACT

In this study, angiography of normal digits of camel has been accomplished, and the vessels of digits and its distribution have been evaluated to be compared with abnormal digits in the future studies. The thoracic and pelvic limb of 16 camels were collected immediately following slaughter. The palmar and plantar arteries were isolated and catheterised by 18-gauge angiocatheter needle; perfused by 40-50 ml of iodinated compound injected into each vessel. Angiograms were obtained using dorsopalmer, dorsoplanter and latero-medial projections. In the pelvic limb, above the fetlock joint, the deep palmar arch communicates with the median artery via the anastomotic branch, forming the superficial palmar arch, from which two branches were clear, 1-palmar common digital artery IV that divides into palmar proper digital arteries IV and V, close to the lateral accessory (fifth) digit. 2-Palmar common digital artery III, produces the first branch and continues distally near the middle of the proximal phalanx, it gives off two palmar branches of the proximal phalanx. Vascular distribution of the pelvic limb was similar to thoracic limb, carrying the name of plantar instead of palmar.

Key words: Angiography, camel, digit

Angiography is a technique that aids the evaluation of size, number, distribution, wall integrity, and luminal diameter of vessels. It is used for the diagnosis of pathological condition such as, traumatic ischaemia, thrombosis, congenital malformation, bone pathology and other conditions. Knowledge of normal angiographic appearance of a structure serves the basis for comparison. This technique has been used for normal digit in cattle (Gogoi *et al,* 1982; Prenticet and Wyn-Jones, 1973 and Singh, 1994), goat (Burns and Cornell, 1981) and horse (Ackerman *et al,* 1975 and Rosentein *et al,* 200; Scott *et al,* 1976) but has not been reported in camel (Ramadan, 1994 and Al-Ani Falah, 2004). In persent study, angiography of normal digits of camel has been done.

Materials and Methods

The thoracic and pelvic limbs of 16 camels were collected immediately following slaughter. The palmar and plantar arteries were isolated and catheterised with 18-gauge angiocatheter needle. These were flushed with heparinised saline solution and perfused with a 40-50 iodinated compound (Lipidol) injected into each vessel. Angiograms were obtained in dorso-palmar, dorso-plantar and latero-medial positions. The exposed films were processed by hand and were studied on the negatoscope. The details of vessels were recorded and measured.

Results

In the pelvic limb, above the fetlock joint, the deep palmar arch communicates with the median artery via the anastomotic branch, forming the superficial palmar arch, from which two branches are clear, 1-palmar common digital artery IV that divides into palmar proper digital arteries IV and V, near the lateral accessory (Fifth) digit. 2-Palmar common digital artery III, produces the first branch and continues distally near the middle of the proximal phalanx, it gives off two palmar branches of the proximal phalanx. The palmar common digital artery III at the level of first phalanx divides into many branches before it ends up with the proper digital artery. The latter after coursing the interdigital space divides into palmar proper digital arteries III and IV. Palmar proper digital artery IV, at the middle of the proximal phalanx anastomoses with the palmar branch of the proximal phalanx that is a branch of the palmar common digital artery III. Lateral (abaxial) dorsal artery IV arises vascular confluence, supplying the dorsal abaxial surface of the fourth digit. On the other side, above the fetlock joint, the radial artery is connected with the (distal) deep palmar arch, beyond which it continues as palmar common digital artery II. The latter, near the medial accessory (second) digit, divides into palmar digital arteries II and III. Palmar proper digital artery III descends along the abaxial side of the third digit and near the middle of the

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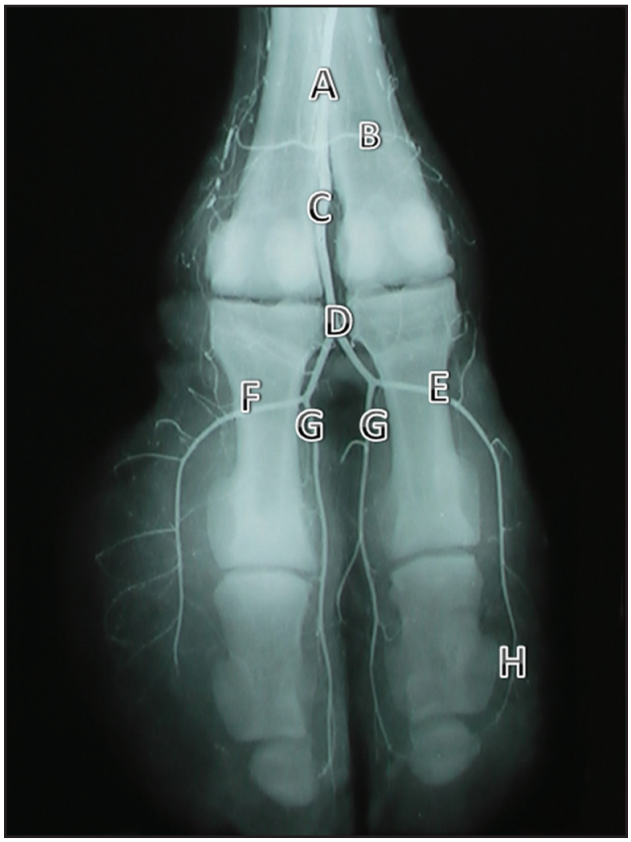

Fig 1. Angiogram in a dorso-palmer view showing arterial pattern of camel hind foot. A) dorsal metatarsal artery III. B) distal perforating branch. C) plantar common digital artery III. D) Interdigital digital artery. E) (abaxial) Plantar proper digital artery III. F) (abaxial) plantar proper digital artery IV. G) plantar digital artery III and artery IV. H) dorsal branch of third phalanx.

Fig 2. Angiogram in a dorso-palmer view showing arterial pattern of camel fore foot. B) distal perforating branch. C) dorsal common digital artery III. D) inter digital artery. E) medial (abaxial) dorsal digital artery III. F) lateral (abaxial) dorsal digital artery IV. G) axial palmar proper digital artery III and IV. H) dorsal branch of third phalanx.

proximal phalanx, receives the palmar branch of the proximal phalanx from palmar common digital artery III. The medial (abaxial) dorsal digital artery III arises from this vascular confluence, supplying the dorsal abaxial surface of the third digit. Vascular distribution of the pelvic limb is similar to thoracic limb, carrying the name of plantar instead of palmar.

Discussion

Angiography has been used as a research diagnosis to evaluate ruminant digit vascular diseases (Burns and Cornell, 1981; Gogoi *et al,* 1982; Ramadan, 1994 and Singh, 1994) for example, research investigating the effects of laminitis on vascular alteration in cattle by angiographic evaluation of digital arteries (Singh, 1994). The literature details of circulatory pattern to the foot either front leg or hind leg in camel is not available (Ramadan, 1994 and Al-Ani Falah, 2004). The present study revealed that many small branches, which could not be trace on gross dissection, were visualised angiographically. The circulatory arterial pattern of camel digits is completely different from the horse (Ackerman *et al,* 1975 and Rosentein *et al,* 200; Scott *et al,* 1976) but has not been reported in camel (Ramadan, 1994 and Al-Ani Falah, 2004), it is somewhat similar to cattle (Gogoi *et al,* 1982; Prenticet and Wyn-Jones 1973 and Singh, 1994) and goat (Burns and Cornell, 1981) except that palmar common digital artery III (thoracic limb) and plantar common digital artery III (pelvic limb) at the level of first phalanx divides into many branches before it gives off to the proper digital artery. These branches are in 6-8 in number and nourish the coronary area, bulb and heel. They also produce arches cranially and some of these anastomose to the branches of plantar and palmar common digital artery II and IV, on the lateral or medial aspects of the digits. Many branches are given off from the proper digital artery which nourishes the sole, heel and bulbar area which is similar to the cattle and caprine.

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