Some Carpal Lesions in the Non-racehorse

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Osteoarthritis of the antebrachiocarpal joint

In contrast to the Thoroughbred, Standardbred and Quarterhorse racehorses the carpus is a relatively infrequent source of pain causing lameness in non-racehorses and the antebrachiocarpal joint is more frequently involved than the middle carpal joint. The joint also seems to be tolerant of relatively advanced pathological change until lameness is apparent. Both sports horses and pleasure horses are affected. Other clinical signs such as resentment of full carpal flexion, fidgeting whilst being trimmed and shod, awkward behaviour when studs are being place in or removed from the shoes, distension of the antebrachiocarpal joint capsule or reduced flexion of the carpus while jumping and a tendency to have rails down may precede recognition of overt lameness.

Diagnosis of the cause of lameness is not a challenge because there is generally distension of the joint capsule, resentment of maximal carpal flexion and exacerbation of lameness by flexion. Intra-articular analgesia of the antebrachiocarpal joint usually results in rapid improvement in lameness, and an increased range of pain free flexion, although lameness may not be abolished fully. Fairly advanced radiographic changes are frequently identified when lameness is first recognised, including extensive periarticular osteophyte formation and in some horses secondary osteochondral fragmentation (Fig. 1).

Management represents a challenge because of the advanced nature of the degenerative changes when lameness is first recognised. Clinical improvement is usually achieved with intra-articular medication with corticosteroids and hyaluronan, although repeated treatment at intervals are generally required. A better response may be achieved with Irap (OrthokineR ), provided that there are not extensive areas of full thickness cartilage loss. Osteochondral fragments should be removed arthroscopically.

Osteoarthritis of the carpometacarpal joint

Osteoarthritis of the carpometacarpal joint is an unusual cause of forelimb lameness, usually occurring in mature horses used for any discipline. Lameness may be acute, or insidious in onset and is mild to moderate in degree. There are usually no localising clinical signs. Carpal flexion is not restricted, or resented.

Lameness may be improved by palmar metacarpal (sub-carpal) nerve blocks, probably due to proximal diffusion of the local anaesthetic solution. Intra-articular analgesia of the middle carpal joint also improves lameness. Radiographic examination usually reveals that changes are restricted to either the medial, or lateral side of the joint, with narrowing
of the joint space between the carpus and either the second or fourth metacarpal bones, with subchondral sclerosis and often periosteal new bone extending along the proximal metaphyseal region of the second or fourth metacarpal bone. There may be lucent zones in the base (head) of the second or fourth metacarpal bone.

Response to intra-articular medication of the carpometacarpal joint has been poor. Palliative treatment with a non-steroidal anti-inflammatory drug may allow the horse to be maintained in work.

Fig. 1a. Lateromedial radiographic view of the right carpus of a 9-year-old Advanced event horse that had been in full work until 2 days previously and had been due to compete in a 3* three day event 2 days later. Retrospectively the rider recognised that the horse had been having more show jumps down than normal, but no lameness had been recognised until after galloping 2 days ago, although herniation of the antebrachiocarpal joint dorsomedially had been noticed approximately 9 months previously. There is soft tissue swelling on the dorsal aspect of the carpus, and a well rounded oval chip fracture on the dorsoproximal aspect of the intermediate carpal bone.

Fig. 1b. Dorsolateral-palmaromedial oblique radiographic view of the same carpus as Fig. 1a. There is periarticular osteophyte formation on the dorsoproximal aspect of the intermediate carpal bone and some periosteal new bone on the dorsal aspect of the bone. Clearly these radiological abnormalities long predated the recognition of lameness and at arthroscopic examination there was fairly extensive articular cartilage pathology.
Third carpal bone disease

Sclerosis of the third carpal bone or parasagittal fractures of the third carpal bone are uncommon injuries in non-racehorses that I have only recognised in mature endurance horses and occasionally in event horses (Fig. 2). In endurance horses sclerosis of the radial facet of the third carpal bone has resulted in episodic lameness that has generally only occurred part way through long endurance rides and has usually resolved within 24 hours. Thus diagnosis is a challenge because there are generally no localising clinical signs to suggest the cause of pain causing lameness.

Diagnosis has been dependent firstly on nuclear scintigraphy which has revealed focal increased radiopharmaceutical uptake in the third carpal bone of the lame limb. Subsequent radiographic examination of the carpus, including flexed cranio-proximal-cranio-distal oblique views has revealed sclerosis of the radial facet of the third carpal bone. Comparative views of the contralateral limb have generally been normal. Affected horses can usually remain sound at lower work levels, but have been difficult to maintain in full-length competitive endurance rides.

Incomplete parasagittal fractures of the third carpal bone result in acute onset severe lameness, although there may be no distension of the middle carpal joint and no resentment of carpal flexion. Lameness has been improved or abolished by perineural analgesia of the palmar metacarpal nerves (subcarpal), presumably due either to proximal diffusion or inadvertent placement into the palmar pouch of the middle carpal joint. However, the degree of lameness associated with a third carpal bone fracture has been greater than expected with proximal suspensory desmitis. Paradoxically the response to intra-articular analgesia of the middle carpal joint has sometimes been less than that following subcarpal analgesia. Response to arthroscopically guided internal fixation with a single screw has been favourable.

Fig. 2. Cranio-proximal-cranio-distal oblique radiographic view of the right carpus of an 8-year-old advanced event horse with sudden onset of lameness after its last event 6 days previously. Medial is to the left. There were no localising clinical signs and lameness tended to improve spontaneously with work. Lameness was improved by palmar metacarpal (subcarpal) nerve blocks. On a subsequent occasion intra-articular analgesia of the middle carpal joint abolished the lameness. There is sclerosis of the radial facet of the third carpal bone which was associated with focal intense increased radiopharmaceutical uptake. Lameness resolved with rest, but when full work was resumed 6 months later it recurred as soon as low level jumping recommenced.
Intercarpal ligament injury

Tears of the medial palmar intercarpal ligament are an uncommon cause of lameness in non-racehorses usually with no localising clinical signs. Diagnosis is dependent on localisation of pain to the middle carpal joint by intra-articular analgesia. There are usually no radiographic or scintigraphic abnormalities and the response to intra-articular analgesia is poor. Definitive diagnosis requires arthroscopic evaluation of the joint. In contrast to racehorses, such lesions have been identified without associated osteochondral abnormalities and arthroscopic debridement has resulted in a favourable outcome in a small number of horses.

Although lucent zones in the ulnar carpal bone have been identified in lame racehorses associated with an avulsion of the lateral palmar intercarpal ligament between, similar radiographic abnormalities have been identified in non-racehorses as an incidental finding. With the advent of the ability to image the carpus using magnetic resonance imaging we have begun to recognise injuries of other intercarpal ligaments, such as between the second and third carpal bones (Fig. 3).

![3a.](image1.png) ![3b.](image2.png)

Fig. 3a. Dorsopalmar radiographic view of the left carpus (medial to the left) of a 7-year-old general purpose riding horse with lameness of several months duration. Lameness was improved by palmar metacarpal (subcarpal) nerve blocks and abolished by median and ulnar nerve blocks. Intra-articular analgesia of the middle carpal joint only slightly improved the lameness. There is an ill-defined radio-lucent zone in the proximolateral aspect of the second carpal bone.

Fig. 3b. Dorsal T1 weighted low-field magnetic resonance image of the same carpus as Fig. 3a and c. Medial is to the left. There is a well-defined osseous cyst-like lesion in the proximolateral aspect of the second carpal bone.
Fracture of the accessory carpal bone

Fractures of the accessory carpal bone are usually the result of traumatic injury such as a fall. There is usually severe pain on passive flexion of the carpus & flexion is restricted. The classic fracture is a complete vertical fracture approximately midway between the dorsal and palmar aspects. Less commonly there are comminuted articular fractures on the dorsal aspect of the bone, which without surgical removal will result in secondary osteoarthritis.

Impingement lesions of the deep digital flexor tendon

Impingement lesions of the deep digital flexor tendon (DDFT) may be due to solitary osteochondromas on the distal caudal aspect of the tibia or exostoses at the level of the distal radial physis. Although diagnosis may be straightforward in some horses, with obvious distension of the carpal sheath, pain on passive flexion of the carpus and lameness accentuated by flexion, associated with obvious radiographic abnormalities, in other horses the diagnosis is much more challenging. There may be no localising clinical signs, and lameness may be extremely episodic and transient in nature, although when present may be remarkably severe. Radiographic abnormalities may be absent and diagnosis is dependent on ultrasonographic identification of an osseous spur and disruption of the normal architecture of the DDFT. Tenoscopic removal of the osteochondroma or exostosis generally results in a favourable outcome.

Further reading

