Some Lameness Conditions Associated with the Shoulder and Elbow in Mature Sports Horses

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Osteoarthritis of the humeroradial (elbow) joint

Osteoarthritis (OA) of the elbow is relatively unusual and tends to be seen in older athletes. Often there is a prior history of trauma. The horse may resent manipulation of the elbow, but it is usually not possible to appreciate joint effusion. Lameness is often variable in degree, within and between examinations, and is usually worst on a hard surface, especially on a circle. Intra-articular analgesia results in improvement in lameness. Periarticular osteophyte formation, alterations in subchondral bone opacity and narrowing of joint space width may be seen radiographically. Care should be taken not to misinterpret as osteophytes normal bony lips on the dorsoproximal aspect of the radius.

The repeated use of intra-articular polysulphated glycosoaminoglycans has been most effective in resolving lameness, but the long-term prognosis for return to full athletic function is guarded.

Osseous cyst-like lesions of the proximal aspect of the radius

Osseous cyst-like lesions occur most commonly medially in the proximal radial epiphysis, and usually result in acute onset, relatively severe lameness in young horses. Lameness may be very variable in degree, within and between examinations, and is usually substantially improved by intra-articular analgesia. In addition to a well-defined OCLL it is common to identify periosteal new bone on the proximal medial metaphyseal region of the radius.

Intra-articular medication with hyaluronan or corticosteroids (methyl prednisolone acetate) has resulted in successful resolution of lameness. In some horses the OCLL has resolved radiographically. Surgical treatment by curettage of the cyst using an extra-articular approach has been successful in some horses, but fracture through the cyst has been a recognised complication. Recurrent lameness after surgical treatment may also occur.

Enthesopathy at the insertion of biceps brachii

Tearing of the attachment of biceps brachii from the cranioproximal aspect of the radius may be associated with a traumatic injury such as a fall, but frequently there is no history suggestive of the cause. Lameness is sudden in onset and often not associated with any
localising signs, except pain on manipulation of the elbow in acute cases. There are no particular characteristics of the lameness. The response to local analgesic techniques is negative. Radiographic examination may reveal periosteal new bone on the cranioproximal aspect of the humerus in chronic cases. Sometimes there is an adjacent mineralised fragment, either an avulsion fracture, or dystrophic mineralisation. Some new bone formation on the cranioproximal aspect of the radius can be seen in normal horses, reflecting previous injury, thus care should be taken in the interpretation of its current clinical significance. Nuclear scintigraphic examination is very helpful both in acute cases prior to the development of periosteal new bone, and in chronic cases. Ultrasonographic evaluation has not been very helpful. Treatment is by rest. The prognosis is guarded to fair.

**Collateral desmitis of the elbow**

Injury to the collateral ligaments of the elbow is not common and is usually the result of a traumatic injury, such as a fall. Damage to the lateral collateral ligament has been identified most frequently. Severe injuries may also be associated with injury to the joint capsule and OA may ensue. Lameness is acute in onset. Subtle soft tissue swelling may be appreciated in the elbow region and manipulation of the elbow may induce pain. Lameness may be partially improved by intra-articular analgesia of the elbow. If damage is restricted to extra-articular structures then the response may be negative. Nuclear scintigraphic examination may be helpful in these cases. There is increased uptake of the radiopharmaceutical at the sites of ligament attachment on the distal humerus and proximal radius.

Definitive diagnosis requires ultrasonographic examination and identification of disruption of the normally linear pattern of echoes within the ligament. Sometimes periosteal new bone or avulsion fractures can be identified at the region of ligamentous attachment. Radiographic examination should also be performed to identify any concurrent bony pathology.

Minor lesions have responded well to a period of box rest and controlled walking exercise, but lesions which have been associated with periosteal new bone formation have often been associated with persistent lameness and the development of OA.

**Osseous cyst-like lesions in the scapula**

True subchondral bone cysts (SBCs) occur in the middle of the glenoid cavity of the scapula. Trauma may be an inciting cause. Lameness is usually acute in onset and moderate to severe. In some horses the lameness has been extremely variable in degree, both within and between examination periods, varying between barely detectable at any gait, to obvious at the walk. Lameness is usually improved by intra-articular analgesia of the shoulder joint, although the degree of improvement is variable. Moreover interpretation can be extremely difficult in those horses which show marked, spontaneous variations in lameness.
Small radiolucent zones are occasionally seen in the middle of the opaque band of subchondral bone of the glenoid cavity of the scapula in clinically normal horses, and in the contralateral limb of horses with lameness associated with a large subchondral bone cyst in the distal scapula. Infrequently lameness has been identified in horses with lameness improved by intra-articular analgesia, but no other radiological changes. This has been correlated with defects in the articular cartilage extending into the subchondral bone. More commonly a large circular, or dome shaped radiolucent area is seen, surrounded by a narrow rim of sclerosis (Fig. 1). In some of the older horses, in which such SBCs have been identified, the cysts have been less well defined, being less radiolucent. In skeletally mature horses similar lesions have occasionally been identified bilaterally associated with apparently unilateral lameness.

Nuclear scintigraphic examination may be helpful in horses in which lameness is extremely variable in degree within an examination period. SBCs are associated with active bone modelling, therefore there is an intense focal region of increased radiopharmaceutical uptake.

Surgical treatment of subtle small lucent zones has been successful, but effective debridement of large lesions is impractical and the response to intra-articular medication is generally poor.

Fig. 1. Mediolateral coned radiographic view of the right scapulohumeral joint of a 7-year-old Warmblood gelding with intermittent lameness of several months' duration. Lameness was barely apparent except when ridden and was improved by intra-articular analgesia. There is an osseous cyst-like lesion in the distal aspect of the scapula surrounded by a rim of sclerosis. Without the cone, the lesion was much less obvious.
Osseous cyst-like lesions in the humeral tubercles

Trauma to the shoulder region, often the result of a fall or a collision, may result in a lameness which is not responsive to any local analgesic technique. There is generally focal increased radiopharmaceutical uptake in the proximolateral aspect of the humerus. In some horses there are no associated radiographic abnormalities, whereas in others an ill-defined radiolucent area develops which is sometimes seen in a mediolateral radiograph but may only be visible in a craniomedial-caudolateral oblique view.

Osteoarthritis of the scapulohumeral joint

Osteoarthritis in the scapulohumeral joint is relatively uncommon, except as a sequel to osteochondrosis, or an intra-articular fracture, or a tear of the shoulder joint capsule. Lameness is variable and in some horses may only be apparent when ridden and may or may not be improved by intra-articular analgesia. Radiographic abnormalities include loss of congruity between the glenoid cavity of the scapula and the humeral head, due to flattening of the humeral head or modelling of the ventral angle of the scapula, periarticular osteophyte formation, most easily seen on the cranial articular margins of the scapula, with or without lucent areas in the subchondral bone (Fig. 2). The response to intra-articular medication is usually poor and the prognosis for athletic function is guarded.

Care should be taken when evaluating the shoulder joint arthroscopically, since there are widespread aging changes in the articular cartilage, especially of the distal scapula. These include softening of the articular cartilage and extensive fissure formation. There may also be modelling changes of the articular margins of the glenoid cavity of the scapula.

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Fig. 2. Mediolateral radiographic view of the right scapulohumeral joint of a 5-year-old Warmblood stallion, recently purchased from a Dutch dealer as a prospective Grand Prix dressage horse. Within 3 weeks of purchase the horse exhibited a variable degree of right forelimb lameness only when ridden and was becoming progressively more resistant to work. Perineural analgesia of the distal aspect of the limb up to median and ulnar nerve blocks did not resolve the lameness and intra-articular analgesia of the elbow and shoulder joints was also negative. There is radiographic evidence of advanced osteoarthritis of the scapulohumeral joint characterised by modelling of the ventral angle of the scapula, periarticular osteophyte formation on the caudoproximal aspect of the humerus and loss of congruity between the articular surfaces of the scapula and humerus. This was associated with subtle increased radiopharmaceutical uptake in the distal caudal aspect of the humerus.
Lesions of the tendon of biceps brachii, the intertubercular bursa and the humeral tubercles

Injury of the tendon of biceps brachii is a relatively uncommon cause of forelimb lameness, and there is no typical history. Frequently there are no localising signs suggestive of the source of pain. In some horses forced retraction of the limb induces discomfort, but this is an unreliable finding. Lameness varies in degree from mild to severe, and only if it is severe are the gait characteristics typical of proximal limb lameness. Lameness may improve by intra-thecal analgesia of the intertubercular bursa, although the response may be slow and incomplete. In some horses there is communication between the shoulder joint and the intertubercular bursa and intra-articular analgesia may improve lameness associated with lesions in the bursa.

Diagnosis is based upon ultrasonographic examination and because the response to intra-thecal analgesia can be negative, ultrasonography is the most useful diagnostic technique, permitting evaluation of the tendon of biceps brachii, the bursa and the underlying humeral tubercles. The entire length of the tendon of biceps brachii should be examined carefully, from its origin on the supraglenoid tubercle of the scapula to the musculotendinous junction. The horse should be standing fully load bearing on the limb to avoid hypoechoic artefacts within the tendon. It is often necessary to examine the medial and lateral lobes independently, since it is difficult to maintain both lobes in focus simultaneously. The tendon should be examined in both transverse and longitudinal planes, and careful comparison made with the contralateral limb. Ultrasonographic abnormalities include enlargement of the tendon, loss of definition of one of its margins, hypoechoic defects within the tendon and loss of fibre pattern in longitudinal images, or dystrophic mineralisation (Fig. 3). The humeral tubercles should be inspected carefully for evidence of any concurrent damage. There may also be concurrent evidence of bursitis characterised by an abnormal amount of fluid within the sheath (bursa). This results in an increased anechoic space between the tendon and the humerus. Occasionally echogenic bodies are seen free within the bursa.

Treatment of tendonitis of biceps brachii consists of box rest and controlled walking exercise. Injection of hyaluronan may be beneficial. The tendon should be monitored ultrasonographically at up to 3 month intervals. At least 6 to 9 months convalescent time is required for acute lesions, which have a fair prognosis. The prognosis for chronic injuries is poor. Permanent enlargement of the tendon within the confined space between the braciocephalicus muscle and the humerus, and loss of normal gliding function cause persistent pain.

Lesions of the humeral tubercles are a rare cause of forelimb lameness, which may occur in isolation or in conjunction with lesions of the tendon of biceps brachii. Horses have moderate to severe lameness and may resent manipulation of the shoulder, although in some horses there are no localizing clinical signs. Nuclear scintigraphy may highlight the presence of a lesion. Abnormalities of the humeral tubercles may be seen as lucent areas radiographically, or ultrasonographically as a roughened osseous surface with or without thinning of the overlying cartilage. Some horses have responded well to conservative
management. In other horses surgical exploration has revealed necrotic areas of bone that were readily debrided, resulting in improvement in lameness.

Soreness of the brachiocephalicus muscles

Palpation of the brachiocephalicus muscles at the base of the neck may elicit pain and muscle spasm in horses in association with pain in the distal aspect of the limb causing lameness. However, muscle soreness can itself be a cause of lameness which is often only apparent at the walk, and may more easily be felt by a rider than seen by an observer. Rest and physiotherapy treatment (e.g., therapeutic ultrasound) usually resolves the lameness.

Fibrosis of the brachiocephalicus muscle

Clinical signs of fibrosis of the brachiocephalicus muscle are rather non-specific and diagnosis is difficult. A number of dressage and event horses have been identified which have only shown forelimb lameness whilst performing lateral work. Palpation has revealed no detectable abnormality. Local analgesic techniques have not altered the lameness. Ultrasonographic examination has revealed hyperechogenic areas of fibrosis or
mineralisation within braciocephalicus in the lame limb only, usually cranial to the intertubercular bursa (Fig. 4). Repeated faradic treatment or shock wave therapy have alleviated the clinical signs.

Fig. 4. Transverse ultrasonographic images of the brachiocephalicus muscle overlying the intertubercular (bicipital) bursa of an 8-year-old Thoroughbred event horse that only showed lameness performing lateral dressage movements, especially right or left half pass. There is focal increased echogenicity in the muscle consistent with fibrosis. This was improved by repeated local faradic treatment.

Further reading


