



Humeral Fractures and Stress Fractures in Racehorses

General Information about Humeral Fractures and Stress Fractures

EQUINE HEALTH MAKES A DIFFERENCE



- Humeral fractures typically occur due to bone weakening associated with a pre-existing stress fracture. Stress fractures commonly occur in the proximocaudal aspect (neck) of the humerus (on the back of the top of the humerus) and caudal (or less commonly, cranial) aspect of the distal part of the cortex (proximal to the humeral condyles, above the elbow joint). Complete fractures of the humerus are more commonly associated with stress fractures of the neck of the humerus than distal stress fractures.
- Both front limbs of horses are commonly affected with a humeral stress fracture. Consequently, affected horses may demonstrate an unwillingness to perform, but may not have a clear left front leg or right front leg lameness.
- Initially, affected horses may be markedly lame, but the lameness may appear to resolve quickly even though the stress fracture has not had time to heal. Other horses have mild to severe lameness. Horses with severe lameness are likely to have a shortened cranial phase of stride at walk and trot.
- Humeral stress fractures commonly (but not always) occur in horses when they start training or are coming back into training from a layup. Humeral stress fracture should be considered if a horse shows poor action or transitory lameness especially during return to training from a layup. Humeral fractures can occur prior to the horse's first breeze after a layup.
- Because of the deep location of the humerus in thick musculature of the arm and close association with the thorax, stress fractures are unlikely to be detected by palpation during physical examination. Pain and exacerbation of lameness occur in some horses after manipulation of the elbow and shoulder joints.
- Humeral stress fractures can be reliably detected using a bone scan (scintigraphy).
- Radiographs are useful for detecting stress fractures in about half of horses with bone scan lesions. Radiographic abnormalities may not be visible early in the course of stress fracture development. Repeated radiographs may be indicated in horses with undiagnosed forelimb lameness and a history compatible with development of a humeral stress fracture because further bone production may become detectable.

Stress Fractures Can be Rehabilitated

Horses with humeral stress fractures can be rehabilitated and return to racing. Recurrence of humeral stress fractures arise in only about 15% of affected horses. Conversely, complete humeral fractures are fatal in an adult racehorse with very few exceptions.

Humeral fractures occur in the bone between the shoulder and elbow joints, beside the chest. The bone is divided into two major parts by an oblique fracture (Figure 1).

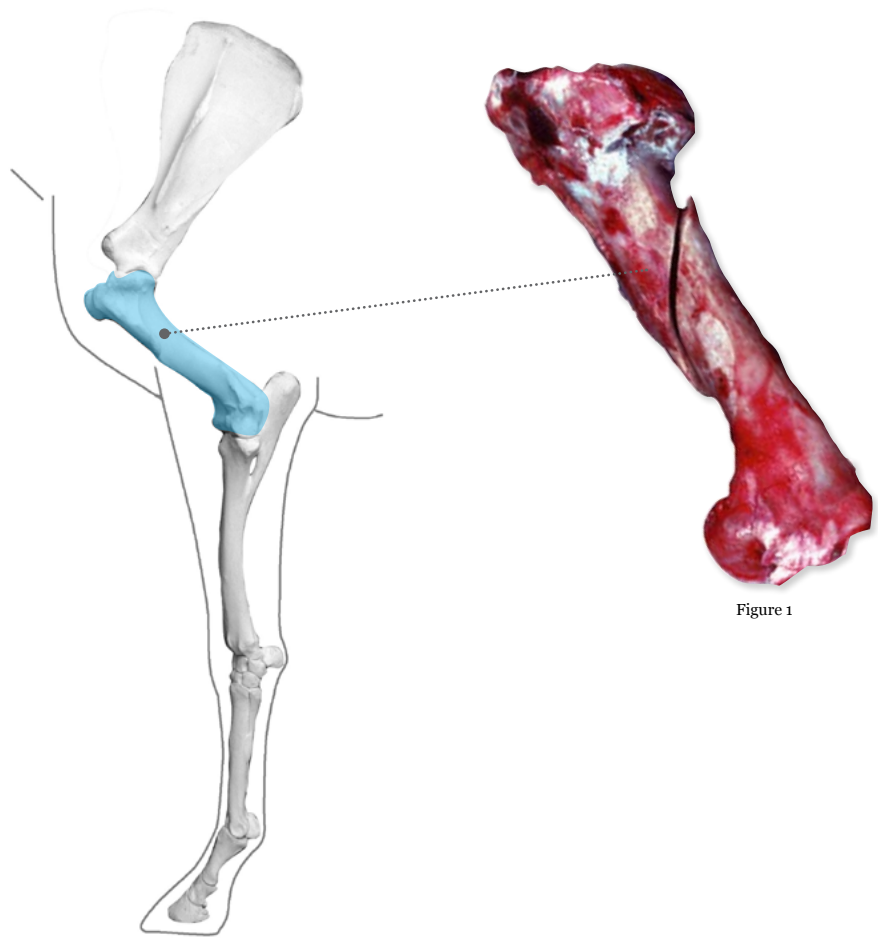


Figure 1



Figure 2



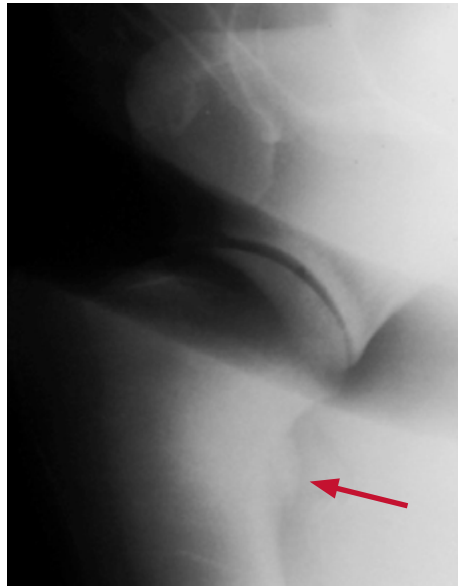
Horses are predisposed to a complete humeral fracture by the presence of a pre-existing stress fracture. The fluffy, whiter bone tissue on the surface of the bone near the fracture is evidence of a pre-existing stress fracture (Figure 2). The stress fracture creates a weak spot in the bone that makes the bone susceptible to complete fracture, usually during normal exercise.

Radiographs

Courtesy of Dr. Rick Arthur



Early Clinical Sign

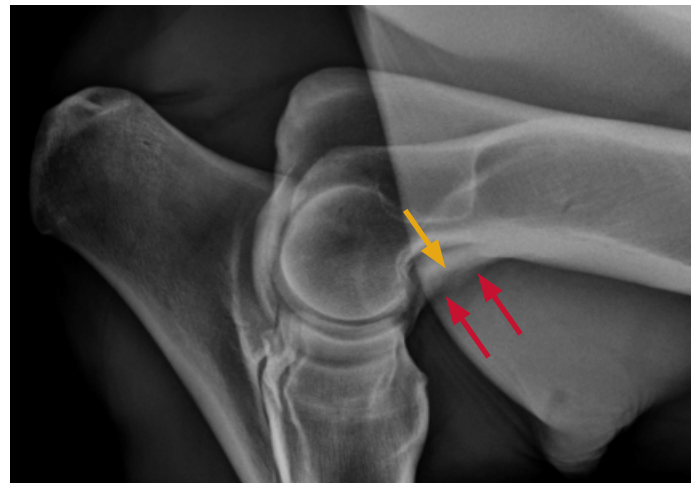
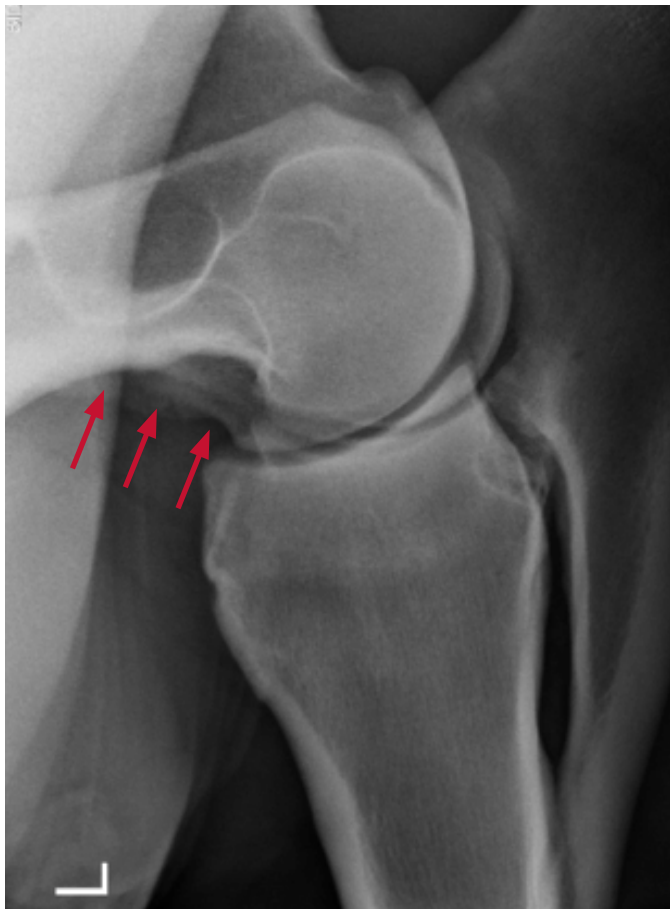


1 Month Later



3 Months Later

Humeral stress fractures can be detected using radiographs in late stages of disease, but not early in their formation. At **one month** after clinical signs, the stress fracture is still active. At **three months**, the stress fracture is healing (smooth, homogeneous callus).



Craniodistal humeral stress fractures in two different horses illustrate periosteal callus (*red arrows*) and loss of cortical integrity (*yellow arrow*).

Bone Scan Images

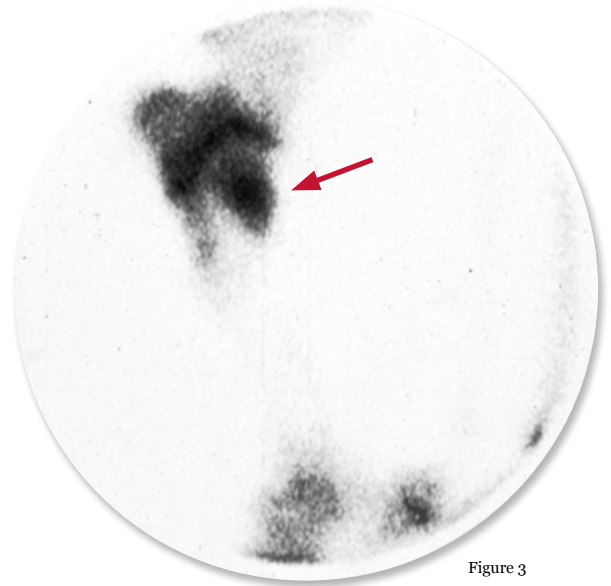
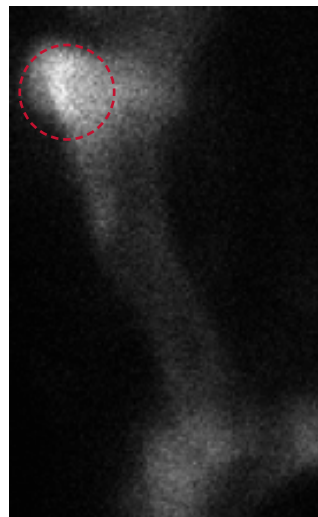


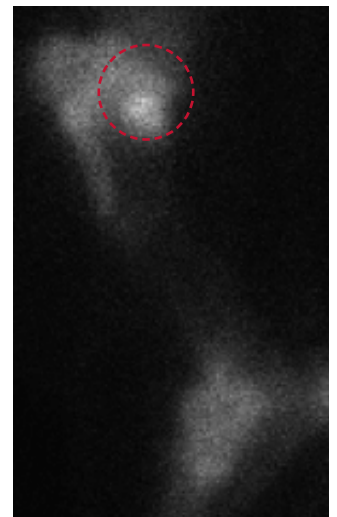
Figure 3

Humeral stress fractures can be detected (*red arrow*) in early and late stages (Figure 3) of injury using scintigraphy (bone scan).

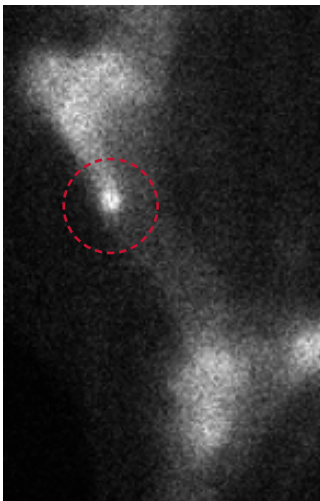
Other sites (*red dashed circles*) of humeral stress fractures that can be detected using scintigraphy include:



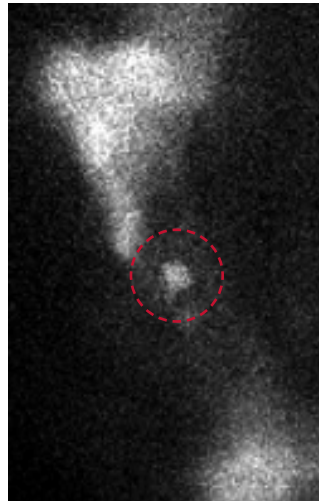
Cranioproximal



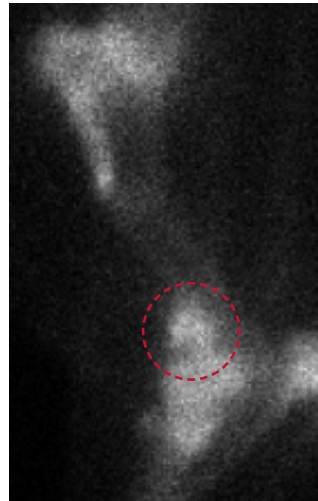
Caudoproximal



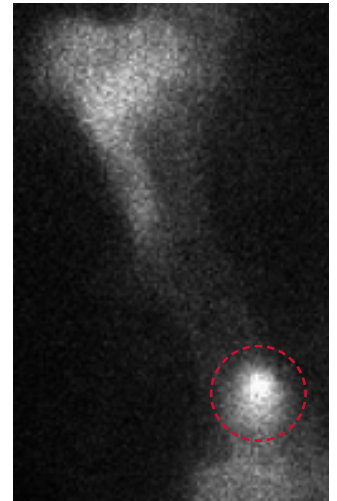
Deltoid Tuberosity



Mid-diaphyseal



Craniodistal



Caudodistal

References

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Susan M Stover, DVM, PhD, Dipl ACVS
530 752-7438
smstover@ucdavis.edu

PL Hitchens, MVPHMgt, PhD
530 754-0156
plhitchens@ucdavis.edu

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