



Case Report

Bilateral Catastrophic Metacarpal Fractures in a Quarter Horse Gelding

Robert Cole^{a,*}, Robyn Wilborn^a, Alex Gillen^a, Joe Newton^b, Heather Walz^c^a Department of Clinical Sciences, College of Veterinary Medicine, Auburn University, Auburn, AL^b Department of Pathobiology, Auburn University, Auburn, AL^c Alabama State Diagnostic Laboratory, Auburn, AL

ARTICLE INFO

Article history:

Received 28 January 2016

Received in revised form 24 February 2016

Accepted 24 February 2016

Available online 27 May 2016

Keywords:

Catastrophic
Metacarpal
Fractures
Quarter Horse

ABSTRACT

A 5 year-old, 450 kg, American Quarter Horse gelding was presented for postmortem examination. The horse had sustained multiple fractures of the metacarpal bones of both fore limbs while being ridden at a canter. Based on the radiographic presence of parasagittal fractures in the condyles of the distal third metacarpus, we theorized that the fractures in this horse likely originated in the metacarpophalangeal joint and propagated into the diaphysis resulting in catastrophic failure. The unique finding in this case is that these injuries occurred in a horse that was not being trained for racing. Owners and trainers should be aware that horses trained for disciplines other than racing can develop condylar fractures similar to racing Thoroughbreds and Quarter Horses.

© 2016 Elsevier Inc. All rights reserved.

1. Introduction

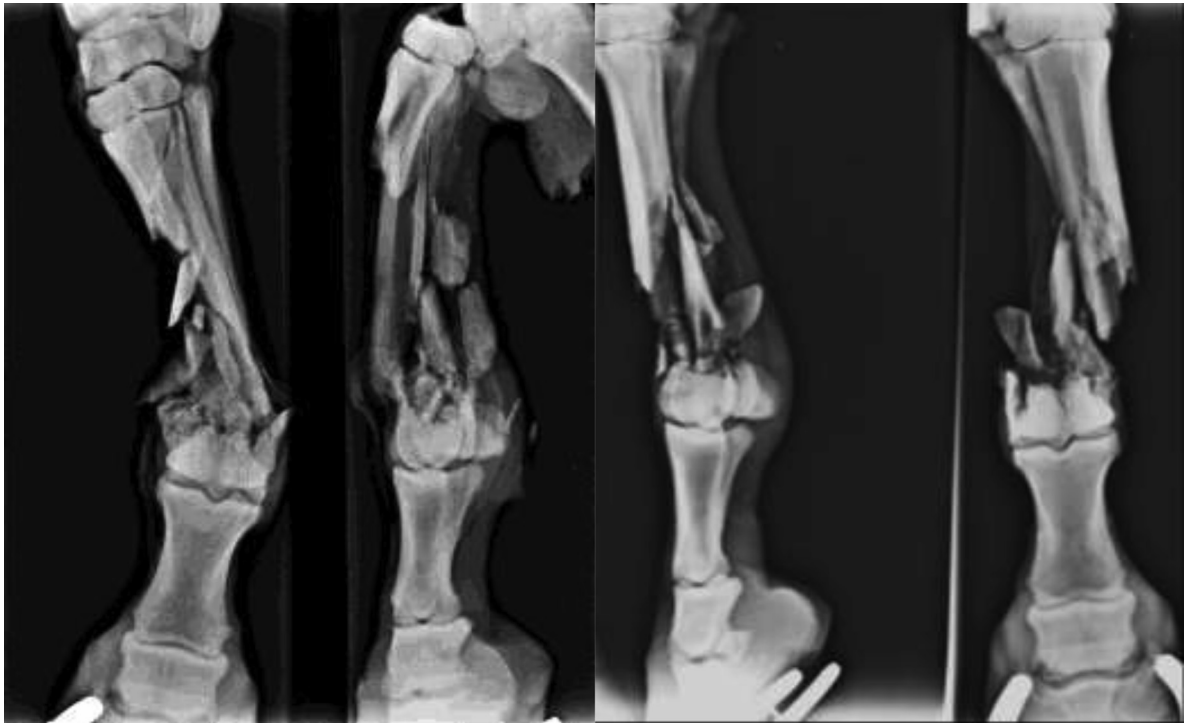
The carcass of a 5-year-old, 450 kg, American Quarter Horse gelding was presented to the Alabama State Diagnostic Laboratory for postmortem examination. The horse had sustained multiple fractures of the metacarpal bones of both fore limbs while being ridden at a canter on a hard-packed, dirt road. The rider was thrown from the horse as it fell. The colt was found sternally recumbent and unable to rise because both third metacarpal bones were fractured. The horse was immediately euthanized by gunshot. The horse had been in training for pleasure riding for 20 days but had been ridden for 1 hour approximately twice per week by the owner since being broken for riding 2 years previously. During its 20 days with the trainer, the horse was ridden in sets of walk, trot, and canter across the same ground for approximately an hour daily, 5 days a week, and then taken on a 2.5- to 3-hour trail ride during the

weekends. The horse was shod for the first time 10 days before being injured. The rider, who weighed 68 kg, reported that the horse did not seem to trip or stumble, but instead “fell out” from beneath him at a canter. Neither the owner nor the rider had observed lameness before the incident.

During examination of orthogonal radiographs of the metacarpi (Fig. 1), severely comminuted distal diaphyseal fractures of both second, third, and fourth metacarpal bones were observed. In the left forelimb, a fracture extended from the medial aspect of the midsagittal ridge through the medial condyle proximally toward the comminuted diaphyseal fracture. The medial and lateral condyles of the right forelimb were fractured in multiple planes that radiated proximally into the comminuted segment. The fracture of this limb spiraled proximally into the carpometacarpal joint. The trabecular pattern appeared to be normal in the intact portions of the third metacarpal bones and in the proximal phalanges. No periosteal new bone or evidence of change in the bone density was identified radiographically. The proximal phalanges were radiographically normal. The suspensory ligaments were

* Corresponding author at: Robert Cole, Department of Clinical Sciences, Auburn University, Auburn, AL 36849.

E-mail address: rcc0025@auburn.edu (R. Cole).



Right forelimb

Left forelimb

Fig. 1. Distal diaphyseal fractures in the third metacarpal bones were severely comminuted. A spiral fracture extended proximally into the carpometacarpal joint of the right forelimb. Fissure lines were seen extending into both metacarpophalangeal joints. The overall trabecular pattern appeared to be normal in the intact portions of the third metacarpal bones and in the proximal phalanges. No periosteal changes were identified, and no changes in bone density were visible.

intact and visually normal. A cortical fragment taken from a fracture site in each of the third metacarpal bones was demineralized, and sections processed for standard paraffin embedding. Slides were stained with H and E according to standard methods (Kiernan 2008). The sections of bone were histologically normal.

2. Discussion

Few apparently spontaneous fractures occurring in athletic horses are actually spontaneous. Instead, nearly all are the end result of progressive deterioration of focal areas of the skeleton from repetitive injury [1]. Predilection sites for repetitive injuries (i.e., stress or fatigue injuries) of the third metacarpal bone include the dorsomedial or dorso-lateral cortex (types 1 and 2 dorsal metacarpal disease, respectively) [2], the palmaroproximal cortex [3], the palmarolateral aspect of the distal end of the diaphysis [4], the third metacarpal condyles [5–7], and the distal third of the metacarpus [8]. Most often these stress injuries are reported to occur in the racing Thoroughbreds, and in nearly all cases, lameness, rather than catastrophic injury, is the result. This case is unusual in that the horse was an American Quarter Horse being trained for pleasure riding.

Exercise programs affect the shape and substance of bone and influence the likelihood of a horse developing a

stress fracture of the metacarpus [9]. Most metacarpal stress fractures are reported to occur in horses trained at high speeds [1]. Two types of dorsal metacarpal disease are recognized: type 1 or bucked shins, which occurs in 2-year-old horses and is often associated with lameness and radiographic evidence of a subperiosteal callus at the dorsal cortex of the third metacarpal bone; and type 2, which occurs in older (3 to 5 years old) horses and is characterized by incomplete, oblique fracture of the dorsolateral cortex of the third metacarpal bone [10]. A number of experiments in racehorses lead Nunamaker [9] to conclude that, whereas high-speed exercise decreases the incidence of type 1 dorsal metacarpal disease, long galloping exercise increases the risk for this disease. Nunamaker [9] also concluded that horses that do not develop bucked shins (i.e., type 1 dorsal metacarpal disease) do not develop stress fractures of the dorsal cortex (i.e., type 2 dorsal metacarpal disease) and, in addition, that horses that do not develop these cortical stress fractures do not develop midshaft fractures of the third metacarpal bone. Because the horse had no history of lameness and had no radiographic evidence of periostitis seen with type 1 dorsal metacarpal disease, dorsal cortical fractures seem to be an unlikely cause of the injuries seen in this horse. The transverse metacarpal stress fracture reported by Ramzan (2009) and the distal third palmar metacarpal cortical fracture reported by O'Sullivan and

Download English Version:

<https://daneshyari.com/en/article/8483535>

Download Persian Version:

<https://daneshyari.com/article/8483535>

[Daneshyari.com](https://daneshyari.com)