Rupture of the Peroneus Tertius Tendon in 25 Horses

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After rupture of the peroneus tertius tendon, 71% of horses return to their previous level of exercise with a mean rehabilitation period of 41.5 wk. Performance horses were 11 times less likely to return to their intended use than pleasure horses. Horses with additional structures injured were 15 times less likely to return to their intended use. Authors' addresses: Ontario Veterinary College, University of Guelph, Guelph, Ontario N1G 2W1, Canada (Koenig, Cruz); Randall Veterinary Hospital, Cleveland, OH 44128 (Genovese); Western College of Veterinary Medicine, Saskatoon, SK, Canada (Fretz); University of Wisconsin, Madison, WN (Trostle).

1. Introduction

The peroneus tertius tendon (PT) is an important part of the reciprocal apparatus, coordinating the flexion and extension of the stifle and hock. The normal PT stretches as the tarsus is extended, helping to center the weight of the upper limb on the tarsus.[1] The cause for complete or partial rupture of the PT is usually traumatic. The very characteristic appearance of this injury can be seen as the limb moves forward, the stifle flexes, but the hock does not. Also when passively flexing the limb, the hock can be moved independently from the stifle. It has been reported that the prognosis for this injury depends on the location and degree of rupture and is favorable when rupture occurs in the tibial region.[2] Our report describes the history, diagnosis, treatment, and outcome of rupture of the peroneus tertius tendon in 25 horses.

2. Materials and Methods

The medical records, radiographs, and ultrasonographic reports of 31 horses with peroneus tertius rupture presented to the Veterinary Teaching Hospitals of the University of Wisconsin (7), University of Saskatchewan (6), and University of Guelph (5), and the Randall Veterinary Hospital (Ohio) (13) between January 1988 and January 2001 were reviewed. Information was compiled on cause of injury, time until presentation to the hospital, age, breed, sex, use before injury, physical examination findings, diagnosis, treatment, and final outcome. Long-term follow-up information on surviving horses was obtained by telephone survey. Successful outcome was defined as a return to the previous level of performance, without evidence of lameness. To evaluate if degree of lameness, site of rupture, ultrasonographic size of lesion, performance level of the horse, age, rehabilitation time, type of injury, or presence of additional injury had an influence on the outcome, a logistic regression model was performed using Log Exact.[a] Significance level was set at $p < 0.05$.

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3. Results

Twenty-five cases with ruptured PT satisfied the inclusion criteria. Six cases were excluded from this report because of concurrent fractures.

In 19 of 25 horses, the injury was caused by blunt trauma resulting in a closed injury. In 6 of 25 horses, the PT was severed because of laceration. In four of these six horses, other important structures were also severed. Three horses presented with a grade 1 of 5 for lameness, six horses presented with a grade 2, eight horses with a grade 3, two horses with a grade 4, and six horses did not have degree of lameness recorded. The above described clinical presentation of rupture of the PT was noted in 21 horses, and in 4 horses it was not recorded. Sixteen horses underwent ultrasonographic evaluation. Either ultrasound, exploration of a laceration, or radiographs determined the location of rupture. Rupture occurred in the midbody of the tendon in 11 horses, at the site of insertion in 9 horses, and at the origin in 2 horses. The site of rupture was not determined in three horses. Treatment for all horses consisted of stall rest with or without hand walking for a mean of 17.4 (range, 0–52) wk. One horse was euthanized during this time period because of severe lameness and inability to rise without assistance. After stall rest, the horses were turned out in pasture for a mean of 15.3 (range, 4–48) wk. Following this period, for horses were euthanized because of persistent lameness. Twenty horses were gradually returned to their previous level of exercise over a mean course of 8.8 (range, 4–12) wk. During this time, one horse re-injured the PT. Another horse re-injured the PT after 24 mo in competition. Both horses were rested again—one for 6 wk and the other for 12 wk—and eventually returned to exercise. Four horses were lost to long-term follow-up (16%). Overall, 71% of horses returned to their previous level of exercise (15 of 21), 24% of horses were euthanized because of persistent lameness (5 of 21), and one horse is currently in rehabilitation. Performance level at the time of injury and presence of an additional injury had a significant influence on return to intended use ($p = 0.0148$). If the horse was a performance horse at the time of injury, it was 11 times less likely to return to its intended use (odds ratio, 10.997; $p = 0.045$). Further, if an additional structure was injured at the time of rupture of the PT, the horse was 14.6 (odds ratio, 14.59; $p = 0.043$) times less likely to return to its intended use. Degree of lameness, site of rupture, ultrasonographic size of lesion, age, rehabilitation time, and type of injury had no influence on the outcome.

4. Discussion

Rupture of the peroneus tertius is uncommon; trauma is the most common cause.[2–4] In this report, rupture of the PT occurred because of either a blunt trauma or laceration. Fuerst and Kaegi described that seven out of nine horses with closed traumatic rupture of the PT were able to resume light work 3 mo after injury and returned to normal exercise 6 mo after the original injury.[2] The horses in this report took over 10 mo to return to their intended use, with 8 mo of exercise restriction before training was resumed. The reason for this discrepancy is unknown. Prognostic indicators previously reported for this type of injury include location and degree of rupture. Prognosis has been reported to be favorable when rupture occurs in the tibial region and poor if the rupture occurs at the point of origin from the distal femur.[2,4] In this study, outcome was not influenced by location of the rupture. The number of horses affected with PT rupture at the origin was small. These two horses had also sustained avulsion fractures of part of the lateral epicondyle of the femur. From our data it is difficult to make conclusions regarding PT rupture at its origin. In one case, the horse was still severely lame 4 mo after rupture and was euthanized. The other case recovered without residual lameness; however, at the time of injury, the filly was only 7-wk old. This successful outcome could have been a result of the ability of young animals to heal at a faster rate with less mechanical consequences.

The finding that performance horses have a decreased prognosis to return to their intended use after rupture of the PT is not surprising. The PT is an important structure of the reciprocal apparatus, and the physical demands in a performance horse are much higher than in a pleasure horse.

Ultrasonographic evaluation of the healing of the tendon may prevent premature return to exercise.[1] Careful monitoring of the healing process with ultrasound is indicated to prevent re-injury. In two performance horses, the PT was re-injured a few months after the original injury. This resulted in lameness at a later time. This horse required an extra 6 mo of rest before training was resumed. The second horse re-injured the PT 13 mo after the original injury, during competition. It recovered well after 6 mo of rest; however, the PT was re-injured 2 yr later while in competition and is currently in rehabilitation. Premature return to exercise was the most likely reason for re-injury. In these horses, functional recovery may result from compensatory hypertrophy of the surrounding muscles,[5,6] giving a false appearance of full recovery. In another horse, a lesion of the PT could be seen ultrasonographically 4 wk after return to exercise. However, this horse presented with no evidence of lameness. In our opinion, it is of paramount importance to monitor PT healing by ultrasonography before returning a horse to exercise. This has also been reported for horses with injury to the superficial digital flexor tendon.[7]

5. Conclusion

After rupture of the peroneus tertius tendon, 71% of horses returned to their previous level of exercise with a mean rehabilitation period of 41.5 wk. If the

horse was a performance horse at the time of injury, it was 11 times less likely to return to its intended use (odds ratio, 10.997). Furthermore, if an additional structure was injured at the time of rupture of the PT, the horse was 14.6 times less likely to return to its intended use. Ultrasonographic evaluation of the injured tendon must be used to monitor adequate healing before returning the horse to exercise.

References and Footnote

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[a]MehtaCyrus and Patel Nitin, Cytel Software Corporation, Cambridge, MA.