Retrospective evaluation of 9 horses with surgical treatment of keratoma.

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Introduction:

Keratomas are aberrant hyperplastic masses of keratin that develop between the hoof wall and the distal phalanx. They are an uncommon cause of lameness in the horse. To the authors' knowledge only few studies report clinical data and the evolution of a series of horses that underwent surgical removal of a keratoma.

Material and methods:

The medical records of 9 horses treated by complete hoof wall resection (CR) for a keratoma were reviewed (2004-2008). Data included signalement, history, radiological findings, postoperative treatments, complications and outcome. Long-term follow up was obtained by telephone questionnaire with owners. The diagnosis of keratoma was made when the typical semicircular or circular radiolucent defect with distinct outline at the margin of the distal phalanx was observed on the radiographs of the foot (essentially dorso 60° proximo-palmaro/plantaro distal oblique views) and/ or when the typical conical or cylindrical horn with or without deviation of the white line was found during the surgical procedure. When performed, the histological examination of the resected fragments confirmed the diagnosis.

Results:

The study included 4 Warmblood horses, 2 Draft horses, 1 Standardbred, 1 Thoroughbred and 1 Frisian horse, with a mean age of 13.2 years (8-20 years). All horses were affected in only one limb and showed a lameness varying between AAEP grade 2 and 4. Except one horse (case 5), all subjects suffered from a recurrent abscess lasting for a duration of between 2 months and 15 years. Only one horse had a history of a previous trauma of the foot. One case suffered from chronic laminitis of more than 6 years duration (case 1). Three cases showed evidence of hoof wall bulging and 2 horses had an enlargement of the white line. The keratoma was located on the fore leg in 5 horses and on the hind limb in 4 horses. The toe was affected in 4 cases and the quarter in 5 cases. The radiographic evaluation of the affected distal phalanx showed a well-defined semicircular shaped defect of an approximate mean diameter of 2.25 cm (0.5-4 cm) except for case 6 where no bone lysis was observed. The surgical procedure (removal of the keratoma by complete hoof wall resection) was performed under general anaesthesia in 8 on the 9 cases. A foot bandage was applied at surgery and changed every 2-3 days until the foot was shod with a normal shoe with side clips or with a bandage-shoe. In some cases, a bridging wire or plate was applied on the border of the hoof defect to decrease tension over the resection. In one case, a foot cast was applied at the time of surgery. Only one case was never shod. Horses were maintained on anti-inflammatory and antibiotic treatment depending on the comfort of the horse and the aspect of the surgical area. In case of severe lameness, a medical treatment with acepromazine and enoxaparine were added in order to prevent laminitis. The postoperative period was uneventful in 3 cases (33%). The postoperative complications included a slightly excessive granulation tissue or slight secretions in 4 cases (generally resolved within 1 month), a high-grade lameness lasting for at least 1 month (3 cases) and recurrence of the keratoma in 2 cases. Concerning the horses with recurrence, in one case (case 8) the owners declined a second surgery, the other case (case 5) underwent a second surgery (which was successful) under sedation and local regional anaesthesia 4 months after the first intervention. This horse was lame for 2 months postoperatively and a fracture of the medial palmar process of the distal phalanx was suspected and treated by appropriate shoeing. One horse (case 1) was subjected to euthanasia during the first postoperative year because of worsening of the pre-existing laminitis. One mare (case 2) was pregnant at the time of the surgery and underwent a long period of rest due to gestation and nursing of the foal but returned to the previous level of exercise. Excluding cases 1-2 and 8, the mean time for soundness at trot was 6.7 months (3-10 months) and these horses returned to the previous level of exercise in a mean time of 9.3 months (3-18 months).

Discussion:

Previous studies[1] concluded that surgical excision of the keratoma is the preferred treatment for horses suffering from lameness caused by a keratoma because of the better outcome compared with a conservative treatment. Boys Smith and co-workers[2] had shown that partial hoof wall resection is preferred to the complete hoof wall resection for keratoma removal because hoof wall stability

is maintained, the complication rate is decreased and the convalescent time is shortened. In the present case study, the authors chose to perform a complete hoof wall resection in all cases as abnormal horn was observed on the whole length of the hoof wall. This can be explained by the long mean duration of the symptoms (several years in some cases) presented by these cases compared with the 3.2 months of mean duration in the Boys Smith's study. The chronicity of the symptoms could also explain the recurrence in 2/9 cases despite a large surgical excision and aggressive tissue debridement. The complication rate for CR here (67%) was comparable to that observed in other studies[2]. For horses returning to work after CR, median time to full work was shorter in the present study than reported time in other studies[2] but the horses here were not racehorses but pleasure riding horses used for light work.

After keratinisation of the hoof defect some authors[2,3] suggest to cover the defect with artificial hoof wall defect repair material such as polymethylmethacrylate to prevent hoof wall instability causing hoof cracks. Even if a large part of the hoof wall was resected in this study no composite material was used to pack the defect and no hoof crack was observed. A fracture of the medial palmar process of the distal phalanx was suspected in a horse. The aetiology of this fracture remains unclear and is probably related to the lysis by compression of the phalanx on its thinner aspect (quarter) even if hoof instability cannot be ruled out.

Conclusion:

Although the global prognosis for a keratoma after resection is good some complications may occur. Chronic cases of keratoma are more at risk due to weakening the distal phalanx, increasing the size of the abnormal horn and making the excision of all abnormal tissue more difficult. An early diagnosis and a timely removal of the keratoma could diminish these complications.

References:

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