

Ultrasonographic imaging of a keratoma in a horse

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A 9-year-old Quarter Horse mare was admitted for evaluation of chronic progressive lameness of the left forelimb of 3 months' duration. Physical examination revealed a 1-cm prominence of the dorsolateral portion of the coronary band that was 3 cm wide. A corresponding prominence in the hoof wall extended distally from the affected coronary band to the wall sole margin. The lateral walls of the front hooves were 1.5 cm longer than the medial walls at the quarter. At a trot, the horse had a grade 3 of 5 lameness in the left forelimb. Pain could not be elicited by pressure applied to the sole with hoof testers; however, palpation of the affected coronary band elicited signs of pain. Induction of local anesthesia of the medial and lateral palmar digital nerves with mepivacaine hydrochloride failed to improve the lameness; however, local anesthesia of the lateral palmar nerve at the level of the proximal sesamoid bone resulted in considerable improvement. Following return of sensation to the anesthetized area, anesthetic solution was infiltrated around the prominence at the coronary band. This also resulted in considerable improvement in the lameness. Radiography of the cranial portion of the left distal phalanx failed to reveal abnormalities.

Ultrasonography of the prominence at the coronary band was performed by use of a 7.5-MHz sector transducer^a with an ultrasound gel pad^b acting as an offset to enhance visualization of superficial structures. The examination was performed in the transverse plane (perpendicular to the long axis of the limb) and longitudinal plane (parallel with the long axis of the limb). In the longitudinal plane, a hypoechoic, well-delineated soft tissue mass measuring 2.5 cm × 2.0 cm × 1.0 cm (Fig 1) was observed between the hoof wall and the articulation of the distal and middle phalanges. In the transverse plane, the hypoechoic mass was not as

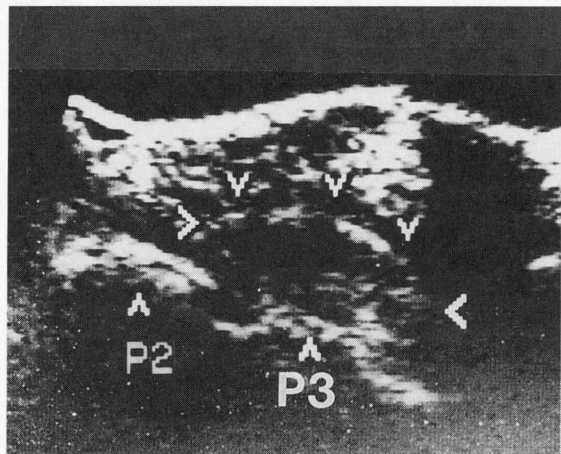


Figure 1—Ultrasonogram obtained via a 7.5-MHz sector transducer with offset. This is a long axis view over the dorsolateral aspect of the hoof at the level of the coronary band. A soft tissue mass (arrowheads) is visible between the hoof wall and the articulation of the middle and distal phalanges.

well defined, however, there was evidence of a soft tissue mass between the dorsal margin of the distal phalanx and the hoof wall. Differential diagnoses included keratoma and neoplasia. On the basis of history and examination, the tentative diagnosis was keratoma.

In preparation for surgical exploration of the affected region, local anesthesia of the medial and lateral palmar and palmar metacarpal nerves was induced and an esmarch bandage^c was applied at the level of the fetlock. A section of hoof wall 1 cm distal to the coronary band, and extending 3 cm distally including the portion covering the mass, was removed by use of a high-speed motorized burr.^d With increasing proximity to the mass, the hoof wall became more compliant. At the junction of the sensitive and insensitive laminae, a smooth white mass was uncovered (Fig 2). The proximal portion of the mass was attached to the coronary band by a 0.5-cm diameter stalk. The mass was isolated and easily removed with a bone curette.

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^aMicroimager 1000, Ausonics Pty Ltd, Lane Cove, Australia.

^bAquaflex, Parker Laboratories Inc, Orange, NJ.

^cEsmarch bandage, American Hospital Supply Corp, McGraw Park, Ill.

^dDremel Tool, Emerson Electric Co, Racine, Wis.



Figure 2—Keratoma in situ after removal of hoof wall.

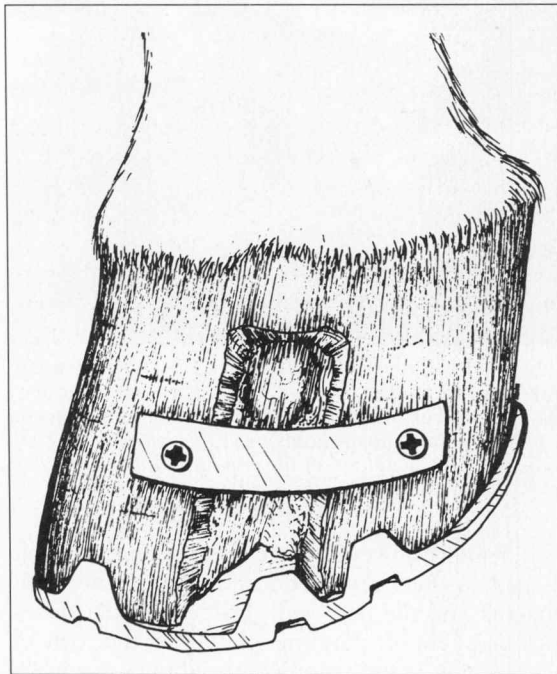


Figure 3—A bar-shoe with toe and quarter clips and a metal band were applied for stabilization of the hoof wall after removal of the keratoma.

Histopathologic diagnosis of the mass was keratoma.

Tetanus prophylaxis was administered, and the mare was treated with procaine penicillin G (22,000 IU/kg, IM, q 12 h) for 5 days. To provide stability, a bar-shoe with a quarter and a toe clip was applied to the left front hoof (Fig 3). A metal band also was applied 2.5 cm distal to the coronary band to provide additional support for the proxi-

mal hoof wall.¹ The sensitive laminae was covered with 4-in × 4-in gauze soaked in povidone iodine and the entire hoof was wrapped daily until drainage from the wound subsided. As granulation tissue approached the level of the surrounding hoof keratin, thimerosal tincture was applied to inhibit further granulation.

Lameness subsided as the hoof grew and stability increased. Six months after removal of the keratoma, the mare was sound at the trot and had not developed complications.

Keratoma is a proliferation of horny tissue originating from the inner surface of the hoof wall. Lameness is induced as pressure is put on the sensitive laminae and underlying distal phalanx.² Keratomas may develop in response to trauma or infection of the hoof,³ but many times the cause is unknown. In the horse of this report, the lateral walls of the front hooves were longer than the medial walls. Excessive concussion to the lateral wall caused by the uneven wear could have initiated the keratoma; however, if this was the only factor, bilateral involvement would have been expected. There was no history of chronic abscessation or external trauma.

Diagnosis of keratoma is made on the basis of a history of lameness with gradual onset, visible deviation in the white line, and a circular or semi-circular radiolucent defect within the distal phalanx.² The clinical signs and history associated with the case described here were suggestive of a keratoma, although neoplasia,⁴ or abscessation were possible. Although radiography did not support the diagnosis, visualization of the mass with ultrasonography confirmed a lesion.

The prognosis for return to soundness in horses with keratoma is considered guarded because of potential for recurrence.⁵ With wide excision and aggressive debridement, however, the probability of recurrence should be low.³

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