Lameness Due to a Coronary Band Epidermoid Cyst*

Alberto Serena, DMV, MS, MRCVS
Centro Medico Equino
Padova, Italy

In horses, epidermoid cysts are uncommon lesions that occur in the nasal diverticulum and, occasionally, in other areas. This case report describes the clinical presentation and treatment of a horse with an epidermoid cyst in the subcutis of the coronary band.

CASE DETAILS

An 8-year-old Standardbred stallion racehorse was examined because of subtle lameness of the right hindlimb that was observed only when the horse was running. The horse had a 3-cm diameter, firm swelling just above the lateral aspect of the right hind coronary band; the swelling was first observed when the horse was 2 years of age. Four weeks before presentation, the swelling enlarged, causing the hoof wall to deform. The trainer suspected that the swelling was associated with the lameness.

A firm, cold protuberance that was 1.5 cm proximal to the lateral aspect of the coronary band was observed during examination of the right hindfoot. The skin and hair covering the protuberance appeared normal. Deep palpation of the area consistently elicited a mild painful response. Flexion of the distal portion of the limb did not exacerbate the lameness. Anesthesia of the plantar digital nerves at the midpastern resolved the lameness.

Radiographic examination of the right hindfoot showed a radiolucent area with a thin cortical margin within the hoof wall. The radiographic lesion was repeatable but visible on only one oblique projection (Figure 1).

Ultrasonographic examination of the lesion using a 7.5-MHz probe revealed a superficial, well-demarcated, round mass (2.7 × 2.5 cm) of mixed echogenicity with a central, echolucent focus consistent with the presence of fluid.

Mepivacaine hydrochloride was administered subcutaneously beneath the mass to desensitize the surrounding tissue. Approximately 20 ml of brown, mucinous fluid was aspirated from the mass through an 18-gauge needle and submitted for aerobic and anaerobic bacterial culture. No microorganisms were isolated. Skin and subcutis, together with a small portion of the mass, were collected using a 4-mm diameter biopsy punch for histopathologic evaluation.

During histologic examination of the mass, epithelium containing a thick keratin layer and no adnexa was observed. Based on the histologic appearance, the mass was determined to be an epidermoid cyst.

After the biopsy, the horse was confined to a stall with the distal portion of the affected limb bandaged.

* A case commentary begins on page 140.
† Dr. Serena is now affiliated with the University of Wisconsin–Madison.
One week after the biopsy, a grayish, thick, slightly malodorous material was observed exuding from the biopsy site. One day later, a firm, round mass, approximately 3 cm in diameter, protruded through the biopsy site. Because the mass had no apparent attachment to the subcutis, it was easily removed using a sponge forceps. The mass had the same histologic features as the punch biopsy specimen. The bulk of the mass comprised thick, hard, multilaminar layers of keratin that sometimes detached. The mass appeared to be an entire epidermoid cyst (Figure 2).

The wound was lavaged under pressure daily with sterile physiologic saline solution, and a firm sterile bandage was applied. Phenylbutazone paste (4.4 mg/kg PO q24h) was administered for 4 days. The wound healed by second intention in 2 weeks. At that time, the horse resumed light training without noticeable lameness. Three years later, the trainer reported that the horse had remained sound, even when running.

DISCUSSION

Four types of cutaneous cyst are recognized in horses:

- Epidermoid or epidermal
- Dermoid
- Follicular
- Dentigerous

Epidermoid cysts occur mainly in the nasal diverticulum (i.e., false nostril) as well-circumscribed, spherical or oval, solitary masses characterized by a simple, stratified, squamous epithelial lining without adnexal structures. Epidermoid cysts can be congenital or acquired. Congenital epidermoid cysts are caused by ectopic migration of epithelial tissue during embryogenesis. In contrast, acquired forms are most often associated with a history of penetrating trauma, suggesting that they result from implantation of ectodermal tissue. Epidermoid cystic lesions can be experimentally produced in the central nervous system of rats by surgical implantation of skin fragments into the spinal cord and frontal cortex. Production of keratinized material from the epidermoid lining inside the lumen leads to progressive expansion of the cyst. Epidermoid cysts are usually benign, although malignant transformation to squamous cell carcinoma has reportedly occurred in animals and humans.

Dermoid cysts are usually found on the dorsal midline over the thoracic and lumbar vertebrae. These cysts are well circumscribed, solitary or multiple, and lined with stratified squamous epithelium that contains adnexal structures, such as sebaceous glands and hair follicles.

Follicular cysts are microscopic and superficially situated. These cysts develop from hyperkeratosis of the hair follicle as well as the epidermis. Usually, the hair bulb atrophies, and the hair is shed in the early course of the lesion so that the cyst is empty or contains laminated keratin.

Dentigerous cysts are derived from epithelium involved in tooth formation and occur when the first branchial cleft fails to close during development. These cysts are typically located at the base of the ear.

Cutaneous cysts, particularly epidermoid cysts, appear to be uncommon in horses. I am unaware of other reports of epidermoid cysts causing lameness in horses. A definitive diagnosis of epidermoid cyst requires histologic examination. In this horse, clinical examination, radiography, and ultrasonography outlined the possible presence of a mass but provided no information about its nature. A keratoma was considered in the differential diagnosis but was later excluded based on results of a histologic examination. Biopsy of the mass likely disrupted the epithelial wall of the cyst. The exudate seen 1 week after the biopsy sample was harvested could have been the result of postbiopsy infection or a more complex inflammatory process caused by a foreign-body reaction; when the epithelial wall of an epidermoid cyst ruptures, an intense foreign-body reaction
typified by infiltration of multinucleated histiocytic cells, macrophages, and neutrophils develops.3,8

This cyst could have been congenital or acquired. Considering its anatomic location and proximity to the skin surface, blunt or penetrating trauma that went unnoticed could have been responsible for the development of the cystic lesion. Because epidermoid cysts tend to expand as a result of the progressive production of keratinized material from the epidermoid lining inside the lumen,2 the cyst eventually increased in size, causing intermittent pressure on the sensitive laminae of the foot or on the highly innervated coronary band. The horse was lame only while running, when concussion of the foot increased.

The treatment of horses with epidermoid cysts is limited to intralesional sclerotherapy and excision. For cysts that are only a blemish, treatment may not be required. Intralesional injection of iodine-based substances,11 neutral-buffered 10% formalin,12 and pure ethanol13 has reportedly resolved epidermoid cysts, but success is variable and recurrence common. Excision seems to be a more effective treatment. If en bloc removal of the cyst is impossible, the entire lining of the cyst should be removed during surgery to prevent recurrence.1

In the case reported here, the entire cyst was expelled 1 week after the biopsy. Because there was no evidence that epithelial lining remained in the wound, flushing and bandaging were the only treatments required for this horse.

Symptomatic epidermoid cysts should be removed surgically, especially if they are embedded in tissue. For cysts that somehow communicate with a body cavity (i.e., epidermal inclusion cyst of the nasal diverticulum), intralesional sclerotherapy can be performed because mummified remnants can be expelled.

ACKNOWLEDGMENTS

The author thanks Dr. Fabio DelPiero for performing the histologic examination and Drs. Earl Gaughan and John Schumacher for critically reviewing the manuscript.

REFERENCES