Aortic-Iliac Thrombosis in Horses

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Aortic-iliac thrombosis has been recognized as a cause of lameness in performance horses for many years. A literature review suggests that the most likely cause of aortic-iliac thrombosis is vascular damage by internal parasitism. The incidence of this disease appears low; however, there are no published data regarding the number of cases on a population basis. Recently, surgical techniques for treating this disease have advanced significantly.

I have made a definitive diagnosis in two cases of protracted aortic-iliac thrombosis and a third case of acute lower-limb ischemia in which aortic-iliac thrombosis was the presumed diagnosis.

Clinical Signs

Classic clinical signs of aortic-iliac thrombosis involve lameness of one hindlimb after 5 to 15 minutes of exercise or work. This lameness results from inadequate blood flow to support increased thigh muscle activity. After 10 to 15 minutes of rest, the horse recovers and can exercise without lameness. The amount of work time required to produce lameness, the degree of lameness, and the recovery time vary from case to case, depending on the degree to which blood supply to the affected limb is reduced. The degree of lameness can progress with time. Early-stage cases can be confused with mechanical delayed release of the patella. The pain can be dramatic, causing a horse to sweat, be reluctant to move, or lie down and immediately stand up. In the affected area of the limb, skin temperature is dramatically decreased (e.g., the limb feels cool) and a palpable pulse is absent or diminished.

Diagnosis

A nonexistent or diminished digital pulse in the affected lower limb is common, especially after exercise. Rectal ultrasonography of the distal aorta and the external iliac arteries can confirm the diagnosis. A 5-MHz transducer used in routine reproductive work is adequate for this examination. Percutaneous ultrasonography of the femoral artery in the inguinal area can show the extent of the thrombus in this area (FIGURE 1; FIGURE 2). Most cases involve only one hindlimb. However, aortic-iliac thrombosis has been bilateral in some cases.

Medical Treatment

Medical therapy has not successfully treated aortic-iliac thrombosis in performance horses in which the disease has progressed to the lameness stage. Because the first clinical sign is lameness associated with exercise, the disease is usually advanced at presentation, rendering medical therapy ineffective. Medical therapies have included aspirin (5 mg/kg PO q24h for 90 days) or phenylbutazone (4.4 mg/kg PO q24h for 60 days) in an attempt to reduce inflammation and platelet aggregation; isoxsuprine (1.5 mg/kg PO q12h for 90 days) to encourage peripheral vasodilation; and fenbendazole at a larvicidal dose (10 mg/kg PO q24h for 5 days [twice the normal dose]) to remove encysted small strongyles.

Surgical Treatment

Successful thrombectomy has been described by Dr. Astrid Rijkenhuizen et al. The horse is placed under general anesthesia and positioned in lateral recumbency with the affected limb on the recumbent side. The contralateral limb is elevated to expose the femoral triangle, which is bordered cranially by the sartorius muscle and caudally by the pectineus muscle of the affected limb. After appropriate sterile preparation, a 10-cm incision is made over the saphenous vein where it courses deeply. The femoral artery, which is submerged in the tissue, is exposed by blunt dissection and stabilized by ligatures and vascular clamps. A partial transverse incision is made into the femoral artery, and the clamps and ligatures are loosened to assess blood flow. The exposed thrombi are carefully dissected and removed. A Fogarty catheter (length: 50 cm; closed diameter: 4 mm; expanded diameter: 4.0 mm) is inserted into the incised artery to aspirate the thrombus. The catheter is removed and the artery is closed with a continuous suture. The horse is treated with antibiotics and corticosteroids for 48 hours.
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16 mm) is inserted proximally past the thrombi in the femoral/external iliac arteries. The catheter is expanded and slowly retracted to remove the thrombus. This process is repeated until all the thrombi are removed and there is no resistance while withdrawing the catheter. The cleaning process can be difficult due to thrombus adherence to the arterial wall and firmness of the thrombi.

Once blood flow is well established to the level of the vascular incision and somewhat distally, the arterial incision is closed. Monofilament polypropylene (USP 5-0) is used in a simple continuous pattern. Before complete closure, 20 mL of heparin solution (250 IU of heparin per mL of physiologic saline) is injected into the femoral artery. The fascia and subcutaneous tissues are closed with braided polyglactin suture (USP 2-0) in a subcuticular pattern.

Post-surgical Care
Analgesia should be provided by administration of flunixin meglumine (1 mg/kg IV q24h for 4 days). Antimicrobial therapy includes cefiofur sodium (2.2 mg/kg IV q24h) and gentamicin (8 mg/kg IV q24h) for 5 days. Recurrence of thrombosis could be prevented by administration of aspirin (5 mg/kg PO q24h indefinitely).

Exercise should be limited to stall rest with hand walking (i.e., 10-minute sessions twice daily for 2 weeks after surgery). After this, the horse can be walked under saddle (i.e., 15-minute sessions twice daily). At 45 days after surgery, the exercise regimen can be gradually increased to working at a canter for 15 minutes. If no lameness is noted at this level of exercise, the horse can be conditioned for regular work.

Results
Studies by Rijkenhuizen et al showed that 60% (9 of 15) affected horses that underwent surgery successfully returned to work. Myositis has been a postsurgical complication in a small number of cases. Dr. Rijkenhuizen surgically treated one of my patients, which responded very well and is still performing as an amateur jumper 3½ years after surgery.

Discussion
Equine aortic-iliac thrombosis is not common in the United States, possibly due to extensive use of anthelmintics. The etiology of the disease is associated with poor internal parasite control of horses in developing countries. Veterinarians should suspect aortic-iliac thrombosis in any lame horse with reduced blood flow in the lower limb or loss of muscle mass in the thigh of one hindlimb. Horses with early-stage aortic-iliac thrombosis lack blood flow to the thigh muscles, particularly the quadriceps, which could be incorrectly diagnosed as delayed patellar release syndrome. (The quadriceps is important for unlocking the patella from the medial trochlear ridge of the femur as a horse begins to advance its limb.) The caudal aorta and iliac arteries of lame horses with suspected aortic-iliac thrombosis and horses with acute lower limb ischemia should be examined by rectal ultrasonography. When the disease is diagnosed, the prognosis for performance horses is unfavorable. Medical therapy has not been rewarding and would be considered unproductive for lame performance horses. However, the surgical procedure described by

Rijkenhuizen et al\(^2\) offers an important option for performance horses with aortic-iliac thrombosis. The surgical prognosis depends on the duration of the thrombus. Early diagnosis increases the probability of a successful outcome.

References