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Case Report

Congenital Fetal Rhabdomyoma in a Thoroughbred Filly Foal

Susan E. Keane [a,*], Deborah J. Racklyeft [b], David P. Taylor [c]

[a] Dartbrook Equine Veterinary Clinic, Scone, New South Wales, Australia
[b] Equine Medicine Consulting, Scone, New South Wales, Australia
[c] Vetnostics, North Ryde, New South Wales, Australia

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ABSTRACT

A Thoroughbred filly foal was presented 12 hours after birth for evaluation of a cranioventral cervical mass. A congenital tumor was suspected after ultrasound examination, fine needle aspirate, and biopsy of the mass. Desmin immunohistochemistry on a section of the mass after surgical excision confirmed a diagnosis of fetal rhabdomyoma, a rare congenital tumor only reported once before in a foal. In the short term, wound complications occurred, but the filly had no long-term complications and subsequently raced successfully. This report outlines the differential diagnoses for cranioventral cervical masses in the foal, the approach to diagnosis, and outlines the difficulties encountered in the removal of masses in this region.

1. Introduction

Rhabdomyomas are benign mesenchymal tumors of skeletal muscle origin [1]. They have been categorized as cardiac or extracardiac types in human medicine [2]. In veterinary medicine, cardiac types have been commonly documented in pigs [3] and a case has also been documented in a fallow deer [4]. Extracardiac rhabdomyomas are further classified into four types: adult, fetal, genital, and rhabdomyomatous mesenchymal hamartoma [2].

In man, fetal rhabdomyoma is a rare tumor, usually occurring in the first 3 years of life and may be congenital [2,5]. Fetal type is typically seen in young boys in the subcutis and subdermis in the head and neck region [2]. A single case of a congenital fetal rhabdomyoma, presenting as a proximal ventral cervical mass, has been described in an Appaloosa filly foal [6]. The current report describes the presentation of a fetal rhabdomyoma in a Thoroughbred foal and its successful surgical treatment.

2. Case Details

2.1. History

A Thoroughbred filly foal was presented for examination 12 hours after birth because a ventral cervical swelling had been noted by the owners. The foal was born at term after a normal gestation and parturition. No abnormalities were evident on the remainder of the clinical examination besides a firm mass in the upper third of the ventral cervical region. The mass was approximately 5 cm × 7 cm × 2 cm in size and was well circumscribed (Fig. 1). It was nonpainful and freely moveable within the subcutaneous space except for a projection to the left of midline that felt attached to deeper structures. Differential diagnoses included a branchial remnant cyst, hematoma, seroma, goiter, a vascular anomaly such as a hemangioma, hamartoma, teratoma, or other congenital tumor.

2.2. Diagnostics

Serum hematology and biochemistry were performed. No significant abnormalities were evident. A glutaraldehyde

* Corresponding author at: Susan E. Keane, Dartbrook Equine Veterinary Clinic, 410 Bunnan Rd, Scone, New South Wales 2337, Australia.
E-mail address: susan@dartbrookequine.com.au (S.E. Keane).

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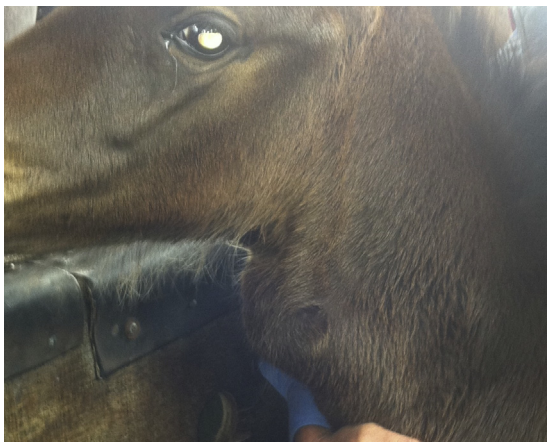

Fig. 1. Photograph of Thoroughbred filly foal at 4 weeks of age. A well-circumscribed mass approximately 5 cm × 7 cm × 2 cm in size is visible on the ventral aspect of the neck. The mass was not associated with the thyroid gland.

coagulation test was performed on the farm for assessment of adequacy of passive transfer of colostral IgG and was found to be normal.

An ultrasound examination was performed using a 7.5- to 12-MHz linear probe. The mass was heterogeneous and hyperechoic, measuring 5 cm × 2 cm × 7 cm in size, 6 cm distal to the ramus of the mandible, and not associated with the thyroid gland. No cystic or fluid-filled structures were noted (Figs. 2A and 2B). Ultrasound examination findings of a solid, soft tissue mass ruled out hematoma, seroma, or branchial remnant cyst as differentials. The revised diagnosis was a congenital tumor.

As the foal was clinically normal, no further diagnostics were undertaken until the foal was older. At 1 month of age, no change in the size of the mass had occurred and further diagnostics were pursued. A fine needle aspirate (FNA) was initially performed. The foal was sedated using butorphanol (Butorgesic) (Troy ilium, Glendenning, New South Wales, Australia) 0.04 mg/kg IV and xylazine (Ilium Xylazil) (Troy ilium, Glendenning, New South Wales, Australia) 0.3 mg/kg IV. The mass was clipped and an area aseptically prepared. A FNA of the mass was taken. Slides were prepared stall side and sent to an outside laboratory for examination. Results were diagnostically inconclusive, and a preliminary diagnosis of a spindle cell tumor was suggested.

A week later, a manual biopsy of the mass was performed under ultrasound guidance. The foal was sedated with xylazine 0.3 mg/kg IV and butorphanol 0.04 mg/kg IV. The area was aseptically prepared, and 0.5 mL of lignocaine hydrochloride (Ilium Lignocaine 20) (Troy ilium, Glendenning, New South Wales, Australia) was injected subcutaneously. A biopsy was taken using a 14 g × 15 cm tru-cut biopsy needle (CareFusion, McGaw Park, IL, USA). Samples were fixed in 10% formalin and sent for histopathological analysis.

Histopathology revealed an abnormal proliferation of small uniform spindle cells, frequently forming collapsed capillaries and arranged in irregular sheets among moderate basophilic ground substance. The cells in the intervening tissue occasionally had a stellate appearance. Mitotic figures were not obvious. A juvenile mesenchymal tumor was suspected, with differential diagnoses including juvenile hemangioma or hemangioendothelioma.

Immunohistochemistry was recommended and performed on the same sample to differentiate more exactly what type of tumor was present. The mesenchymal cells stained strongly with vimentin (mesenchymal marker) and failed to stain with smooth muscle actin (smooth muscle marker) and factor 8 (endothelial marker), ruling out hemangioma. A tumor of skeletal muscle origin or a juvenile hemangioendothelioma was suspected. As the foal was clinically normal, time was given in case of spontaneous regression, which has been documented in humans with congenital fibromatosis [7]. In the 3 weeks after biopsy, however, the mass rapidly increased in size and surgical removal was performed.

2.3. Surgery

The foal was placed under general anesthesia. A 20-cm ventral midline skin incision was made over the mass, and a combination of blunt and sharp dissection was used to mobilize it. It was firm, well circumscribed, and measured 20 × 12 × 12 cm. It extended along fascial planes and was deeply attached to the soft tissues dorsolateral to the left side of the trachea, near the carotid artery. In addition, the left brachiocephalic muscle was incorporated in the left lateral aspect of the mass.

The carotid artery and vagosympathetic trunk were identified, and care was taken to avoid manipulation and damage during surgery. Three large arterial branches from the carotid artery that were supplying the tumor were ligated. Two associated nerve branches were transected as close to the mass as possible. This was done to avoid damage to the vagosympathetic trunk. Tumor removal resulted in a large amount of dead space. A Penrose drain was placed extending through the deep layers to exit through separate incisions proximal and distal to the skin wound. The incision was closed in three layers using three metric polydioxanone (Ethicon Products, Johnson & Johnson Medical, North Ryde, New South Wales, Australia) in a simple interrupted pattern and two metric polydioxanone (Ethicon Products, Johnson & Johnson Medical, North Ryde, New South Wales, Australia) in a simple continuous pattern. The skin incision was closed with staples, and a sterile padded dressing was applied.

The foal recovered uneventfully from anesthesia. The filly was treated with procaine penicillin (Propercillin) (Troy ilium, Glendenning, New South Wales, Australia) 22 mg/kg IM q12 hours and gentamicin (Gentam 100) (Troy ilium, Glendenning, New South Wales, Australia) 6.6 mg/kg IV q24 hours for 5 days after surgery. Flunixin meglumine (Flunixon) (Norbrook, Australasia Pty, Tullamarine, Victoria, Australia) 1.1 mg/kg IV q12 hours was continued for 2 days after surgery. After 2 days, anti-inflammatory treatment was changed to phenylbutazone (Butin paste) (International Animal Health Products, Newmarket, New Zealand) 2.2 mg/kg per os q12 hours for 5 days. After 5 days, phenylbutazone was discontinued and antimicrobial