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BRIEF COMMUNICATION

Perineal sarcoid in a Caspian miniature horse

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Abstract An 8-year-old stallion male Caspian miniature horse was acquired by the Veterinary Teaching Hospital, Islamic Azad University from a commercial source for teaching veterinary students. One year later, during an annual health screen, a mass was noted in the perineal region. The mass was surgically removed. Histologic examination revealed that the mass was a relatively well-demarcated, unencapsulated neoplasm composed of streams, bundles, and whorls of neoplastic spindle cells that had oval to fusiform nuclei with stippled chromatin, variably distinct nucleolus, and moderate amounts of eosinophilic cytoplasm. Based on the morphologic and histologic findings, a diagnosis of equine sarcoid was made. Results of bacteriologic tests and fungal culture of the mass were negative. By re-examining the horse 3 weeks after surgery, the affected site was completely healed. To the authors' knowledge, this is the first report of sarcoid in a Caspian miniature horse.

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Case presentation

An 8-year-old stallion male Caspian miniature horse was acquired by the Veterinary Teaching Hospital, Islamic Azad University from a commercial source. Upon arrival, routine physical examination revealed no abnormal findings. The horse was housed indoor and was used for teaching veterinary students. The animal remained free of clinical signs. One year later, during an annual health screen, a mass ($3 \times 1 \times 2$ cm) was noted in the perineal region (Fig. 1a). A complete blood count and serum chemistry analysis were performed, and the results were unremarkable. The mass was surgically removed (Fig. 1b).

Tissue samples of the mass were fixed in 10% neutral-buffered formalin and embedded in paraffin. Tissue sections were cut at 4 μm and stained with H&E (Harris hematoxylin and eosin Y; Fisher Scientific, Pittsburg, PA). Histologic examination revealed that the mass was a relatively well-demarcated, unencapsulated neoplasm composed of streams, bundles, and whorls of neoplastic spindle cells with collagenous stroma. The neoplastic cells had oval to fusiform nuclei with stippled chromatin, variably distinct nucleolus, moderate amounts of eosinophilic cytoplasm, and indistinct cell borders. Mitotic figures were 2–3 per 10 high power field (Fig. 2). Based on the morphologic and histologic findings, a diagnosis of low-grade fibrosarcoma (sarcoid) was made. Results of bacteriologic tests and fungal culture of the mass were negative. By re-examining the horse 3 weeks after surgery, the affected site was completely healed.

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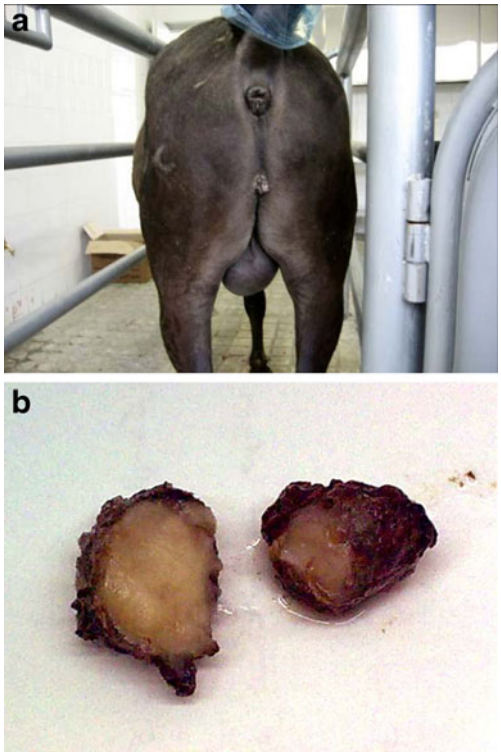

Fig. 1 Digital image of a mass in the perineal region of a stallion male Caspian miniature horse (**a**). Cross-section of a mass in the perineal region of a stallion male Caspian miniature horse after removal (**b**)

Discussion

To the authors' knowledge, this is the first report of sarcoid in a Caspian miniature horse. The Caspian horse is an ancient breed previously believed to have been extinct for over 1,000 years. This breed is probably the most direct ancestor of the Oriental breeds and subsequently of all light horse breeds. The Caspian miniature horse was re-founded in the northern part of Iran around the Caspian Sea in 1969 (Firouz 1969). The conformation of the Caspian horse is similar to that of the horse (*Equus caballus*), and apart from the height, there are only a few minor anatomical differences between this animal and *E. caballus* (Firouz 1971). The overall impression of the Caspian miniature horse is that of a very small, well-proportioned horse. The Caspian head is short and fine with large eyes, a small muzzle, and large nostrils. The legs are slim with dense, strong bone, and no feathering at the fetlock. The color ranges from bay, gray, or chestnut and occasionally black. The Caspian horse is gentle, intelligent, and very willing to work, thus making it very well suited as a riding horse for children (Hatami-Monazah and Pandit 1979). Subsequent studies confirmed the visual picture osteologically and proved that the Caspian is a miniature horse, not a pony (Hendricks 1995; Mason 1996).

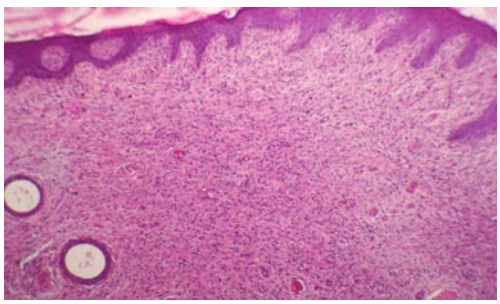

Fig. 2 Microscopic examination of a skin mass in the perineal region of a stallion male Caspian miniature horse. The epidermis is hyperplasic with long tentacle into the dermis. The fibroblasts arranged in streams, bundles, and whorls are proliferated and plumped within the dermis; H&E, ×160

Equine sarcoid (ES), the most common skin tumor in horses, is a locally aggressive, fibroblastic tumor that can be associated with sites of previous trauma. Equine sarcoid develops primarily on the legs, head, and ventral abdomen (Goodrich et al. 1998; Schlipf 1997). The majority of affected horses have a single sarcoid, but approximately 33% develop tumors at multiple sites (Spiegel et al. 2006). While sarcoid skin tumors are not a direct cause of mortality, they are a cause of significant economic loss due to their persistent, recurrent nature and the expense and long duration of treatment. Tumors located on the head often interfere with bridle or halter use, while progressive fibroblastic sarcoids on the lower limbs often become ulcerated and persist as no healing granulomatous wounds.

The pathogenesis of the sarcoid is still unknown; however, it is thought to be immune-mediated (Judson 2008; Scott and Miller, 2003; Von Tscharner et al. 2000). An association between breed of horse and developing sarcoid has been suggested (Angelos et al. 1988). Genetic studies have shown associations between genes in or near the equine major histocompatibility complex and susceptibility to sarcoid (Goodrich et al. 1998). Bovine papilloma virus DNA was detected in sarcoid cases in horses (Martens et al. 2000). In another study on equine sarcoidosis, equine herpesvirus 1 and 2 were not detected using a polymerase chain reaction (PCR) assay (White et al. 2009). It has been suggested that the etiology of ES is probably multifactorial and therefore, continues to be a diagnosis of exclusion (Spiegel et al. 2006). Although molecular techniques such as PCR were not employed in this case, using traditional microbiologic tests, no microorganism was identified.

Despite their characteristic anatomical distribution and gross appearance, a biopsy of the tumor is required for a definitive diagnosis. It has been suggested that histologically, the increased density of dermal fibroblasts is the only common characteristics for all ES cases of the different

clinical types. The presence of other microscopic alterations is variable and could not be used in the differentiation of the clinical types based on histology (Martens et al. 2000).

Alterations in the clinical pathology parameters such as neutrophilia, hyperfibrinogenemia, and hyperglobulinemia have been commonly reported in ES cases which are at least in part due to inflammation. Other alterations reported in ES cases are mild nonregenerative anemia, hypercalcemia, and abnormal kidney and liver function tests (Spiegel et al. 2006). These alterations were not noted in the present case.

Differential diagnosis of ES included dermatophilosis, dermatophytosis, immune-mediated diseases (e.g., pemphigus foliaceus, systemic lupus erythematosus, exfoliative eosinophilic dermatitis, erythema multiforme, food allergies, drug eruptions, and multisystem eosinophilic epitheliotrophic disease), seborrhea, verrucous sarcoids, and toxicoses (Spiegel et al. 2006). The treatments that have been developed for ES have variable results (Goodrich et al. 1998). Overall, ES, when limited to the skin, is associated with a good prognosis, with either partial or complete response to glucocorticoid therapy (Spiegel et al. 2006). In the present case, the sarcoid mass was successfully removed without regrowth or complication, and further treatment was not required.

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