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Review Article

Equine Sarcoid

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Abstract: The aim of the present study was to carry out a mini review on equine sarcoid, addressing its clinical and pathological aspects and its diagnosis characteristics. The sarcoid is a benign, locally invasive tumor of the skin of horses that has a variable epidermal component. It is a biphasic neoplasm as it is derived from the proliferation of two components: dermal fibroblasts and epidermal keratinocytes. It affects animals of all ages; however, it is more common in animals under 6 years old, having no racial or sexual predisposition. Sarcoids can develop anywhere on the body, but are most seen on the face, neck, axilla, ventral abdomen, paragenital region and distal extremity, around the eyelids and lips, foreskin, ear, as well as areas of previous injury or scarring. The diagnosis is based on the clinical history, epidemiology, macroscopic and histological characteristics of the lesions. Histologically, the sarcoid is characterized by a dense dermal proliferation of fibroblasts, forming nests and intertwined bundles and assuming various directions. Surgery, chemotherapy, immunotherapy, radiotherapy, photodynamic therapy and phytotherapy can be used to treat this disease.

Keywords: Horse, skin, diseases, neoplasm.

INTRODUCTION

Brazil is among the four countries with the largest equine herd in the world, with more than five million horses (Brasil, 2016). In the country, horse breeding has great economic and social importance (Richter, 2017). Cutaneous lesions are among the most frequently observed clinical complaints in the world among the diseases that affect horses. Furthermore, equine sarcoid stands out for its high prevalence and importance. Thus, the objective of the present study was to carry out a mini review on equine sarcoid, addressing its clinical and pathological aspects and its diagnosis characteristics.

Equine sarcoid is a benign locally invasive neoplasm of the skin with a variable epidermal component that has a high propensity for recurrence (Knottenbelt 2005). This neoplasm is characterized as a biphasic tumor as it is derived from the proliferation of two components: dermal fibroblasts and epidermal keratinocytes (Semik-Gurgul, 2020).

The sarcoid is common in equine species such as mules, donkeys, zebras, and horses. It affects animals of all ages; however, it is more common in animals under 6 years of age, with most cases observed in animals between 3 and 6 years of age (Brum, 2010). However, elderly animals also have the potential to develop the disease (Salgado *et al*., 2008). There is no sexual distinction for the development of this tumor, nevertheless, one study point to a greater tendency for the development of the disease in castrated animals (Knottenbelt, 2019).

It is estimated that the prevalence of equine sarcoid can vary between 1% and 8% in the population of mules, donkeys, horses, and zebras worldwide (Knottenbelt, 2005) and that this tumor apparently has no racial predisposition. Some studies point out that breeds such as Arabian, Appaloosa, Quarter Horse, and Thoroughbred English have a greater susceptibility to the development of neoplasia (Cremasco *et al*., 2010; Knottenbelt, 2005).

It has been shown that bovine papillomavirus is related to the development of this neoplasm in horses. Bovine papillomavirus types 1, 2 and 13 were identified in sarcoid lesions using molecular techniques (Lunardi *et al*., 2013).

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Sarcoid can develop anywhere on the body, however the face, neck, axilla, ventral abdomen, paragenital region, distal extremity around the eyelids and lips, foreskin, ear, as well as areas of injury. Previous or scar are more affected (Semik-Gurgul, 2020). Clinically, this tumor can be classified into six types: occult, verrucous, nodular, fibroblastic, mixed, and malignant (Knottenbelt, 2019).

Clinical forms can be associated in the same animal, with different locations on the body (Scott & Miller J. R., 2003; Bensignor *et al*., 2005, Brum, 2010). In such a way, they can occur very close and even within the same lesion, giving a varied clinical appearance (Bensignor *et al*., 2005). Over time, the lesions may change their morphological pattern. It is described that verrucous and occult sarcoids, when traumatized, can transform into the fibroblastic type (Lloyd *et al*., 2003). They also appear to have some geographic variation. While occult and warty are common in the UK, in Africa and Australia they are relatively uncommon (Scott & Miller J. R., 2003).

The verrucous type is mainly observed on the head, neck, armpits, and groin (Scott & Miller J. R., 2003; Knottenbelt, 2005). The lesions have a hyperkeratotic appearance, are dry, like a cauliflower, are alopecic and sessile or pedunculated (Radostits *et al*., 2007).

The malignant form was recently described and is commonly seen in the elbow and mandible (Scott & Miller J. R., 2003). It is characterized by marked infiltration and invasion of local lymphatic vessels and lymph nodes (Lloyd *et al*., 2003; Brum, 2010). It is most often seen after repeated trauma, including surgery, in other types of sarcoid (Knottenbelt, 2005).

The fibroblastic type is commonly seen in the armpits, groin, limbs, periocular and other sites of constant trauma (Scott & Miller J. R., 2003). It has a fleshy appearance, exaggerated growth (Figure 1) and is markedly invasive (Lloyd *et al*., 2003). Histologically, proliferation of dermal fibroblasts is observed associated with an epidermis that is almost always intensely ulcerated. When intact, the epidermis presents mild hyperkeratosis and moderate hyperplasia, without thinning of the same (Martens *et al*., 2000).

Figure 1: Equine fibroblast-type sarcoid. A fleshy and ulcerated appearance of the tumor is observed

The occult type occurs more in the neck, face, medial to the thighs and shoulders (Scott & Miller J. R., 2003). Microscopically, it is characterized by a well-circumscribed dermal proliferation. Epidermal alterations are almost always absent (Martens *et al*., 2000).

The mixed type takes on different macroscopic appearances depending on its cellular component. Histologically, this tumor is quite varied, and differences in both dermal and epidermal components can be observed (Martens *et al*., 2000, Brum, 2010).

Clinical signs are nonspecific and are usually associated with the location of the tumors. The diagnosis is based on the clinical history, epidemiology, macroscopic and histological characteristics of the lesions (Venancio *et al*., 2022).

Histologically, the sarcoid is characterized by a dense dermal proliferation of fibroblasts, forming nests and intertwined bundles and assuming various directions (Martens *et al*., 2000). The cells are fusiform or stellate, with an elongated nucleus and frequently atypia. Mitosis rates are low and there is little vascularization (Figure 2) (Bensignor *et al*., 2005).

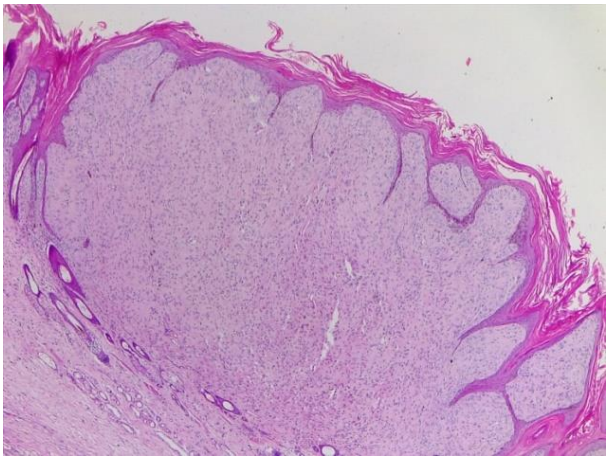

Figure 2: Equine Sacoid. The neoplasm is composed of interlacing streams and bundles of spindled cells and thin rete ridges are observed into the underlying spindle cell proliferation

Surgery, chemotherapy, immunotherapy, radiotherapy, photodynamic therapy, phytotherapy, among others, can be used to treat equine sarcoid (Brum *et al*., 2010).

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