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Equine dermatopathies in southern Brazil: a study of 710 cases

Dermatopatias em equinos na região sul do Rio Grande do Sul: estudo de 710 casos

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ABSTRACT

A retrospective study of equine skin diseases diagnosed in the Laboratório Regional de Diagnóstico, Faculdade de Veterinária, Universidade Federal de Pelotas was conducted between 1978 and 2013. The necropsy and biopsy protocols for horses received for diagnosis were reviewed to determine the prevalence of dermatopathies in southern Brazil. The most prevalent skin diseases in decreasing order were: sarcoid [234/710 (32.9%)], exuberant granulation tissue [81/710 (11.4%)], pythiosis [67/710 (9.4%)], squamous cell carcinoma [55/710 (7.7%)], papillomatosis [33/710 (4.6%)] and habronemiasis [30/710 (4.2%)]. Other skin lesions accounted for 25.3% of all cases studied. The Crioulo breed was the most prevalent [310/710 (43.6%)]. Horses aged between 2-5 years old [230/710 (32.3%)] were the most frequently affected. The data obtained in this study demonstrate the importance of skin diseases that affect horses in southern Brazil. The most of the dermatopathies observed in horses, although not resulting in death could cause aesthetic damage resulting in animal rejection, the inability to participate in collective sports activities and economic losses due to treatment and surgery costs.

Key words: equine, retrospective study, sarcoid, papillomatosis, habronemiasis.

RESUMO

Realizou-se estudo retrospectivo das doenças de pele observadas em equinos no Laboratório Regional de Diagnóstico da Faculdade de Veterinária da Universidade Federal de Pelotas, entre 1978 e 2013, com o objetivo de determinar a prevalência das dermatopatias que ocorrem em equinos na região sul do Rio Grande do Sul. As doenças de pele mais prevalentes em ordem decrescente foram: sarcoide [234/710 (32,96%)], tecido de granulação exuberante [81/710 (11,4%)], pitiose [67/710 (9,4%)],

carcinoma de células escamosas [55/710 (7,7%)], papilomatose [33/710 (4,6%)] e habronemose [30/710 (4,2%)]. As outras doenças de pele juntas corresponderam a 25,3% de todos os casos estudados. A raça Crioula foi a mais acometida [310/710 (43,6%)]. Os animais mais afetados tinham entre 2-5 anos de idade [230/710 (32,3%)]. Com os dados obtidos, foi demonstrada a importância das dermatopatias que afetam equinos na região sul do Rio Grande do Sul. A maioria das enfermidades cutâneas diagnosticadas, apesar de não causar a morte dos animais, compromete a estética que impossibilita a participação em feiras/exposições, além de causar perdas econômicas com gastos com tratamentos e cirurgias.

Palavras-chave: equino, estudo retrospectivo, sarcoide, papilomatose, habronemose.

INTRODUCTION

In large animals, skin diseases are among the most frequently diagnosed disease states; however, the demand for veterinary care in large animals is low compared to small animals (BRUM et al., 2010). Some reports have described the prevalence of skin diseases in the United States (SCOTT&MILLER, 2003), Europe and Australia (LLOYD et al., 2003). However, in other geographic regions of the world, including Brazil, there is little information regarding the prevalence of large animal dermatopathies (SOUZA et al., 2011). In this context, retrospective studies are of great importance because they allow for the grouping of epidemiological, clinical and

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pathological data over time in a specific geographical area (FIGHERA, 2008).

Among skin diseases, skin tumors are an important condition in horses in Rio Grande do Sul, Brazil, and they represent almost 50% of all tumors in this species (BRUM et al., 2010; SOUZA et al., 2011). A study of the most prevalent tumor-like lesions in the central region of Rio Grande do Sul state concluded that sarcoid and squamous cell carcinoma (SCC) were the most prevalent neoplastic lesions observed, and pythiosis, exuberant granulation tissue, and eosinophilic granuloma were the most frequently diagnosed non-neoplastic lesions (SOUZA et al., 2011).

Based on the increasing interest in skin lesions of horses in Brazil and in particular the economic and cultural importance of this species to the country, the present study aimed to establish the predominant skin diseases of horses in southern Brazil.

MATERIAL AND METHODS

A retrospective study of skin diseases in horses was completed. The study reviewed all necropsy protocols, biopsies and skin scrapings from horses received at the Laboratório Regional de Diagnóstico da Faculdade de Veterinária da Universidade Federal de Pelotas (LRD/UFPel) between 1978 and 2013. Epidemiological data related to gender, breed and age of the animals affected by cutaneous lesions were also studied. In all cases, the morphological/etiologic diagnoses assigned to each sample by the pathologist on the case were considered. The age of the horses affected by the different lesions was classified as up to one year, 2-5 years, 6-10 years, 11-15 years and above 16 years. Habronemiasis and pythiosis were analyzed for the months of occurrence given that they are seasonal diseases.

When necessary, the material stored in paraffin blocks from the LRD/UFPel files were processed for histopathology to complement the description of the lesions. To differentiate pythiosis and habronemiasis, slides of these diseases were subjected to silver impregnation (Grocott) and immunohistochemistry.

RESULTS

There were 710 cases of cutaneous lesions diagnosed in horses in southern Brazil between 1978 and 2013, of which 604 were biopsies, 99 skin scrapings and seven necropsies from a total

of 2181 horse samples received during that period. Table 1 summarizes the diagnoses, and the most frequent are presented in descending order: sarcoid (Figure 1A) [234/710 (32.9%)], exuberant granulation tissue [81/710 (11.4%)], pythiosis (Figure 1B) [67/710 (9.4%)], SCC (Figure 1C) [55/710 (7.7%)], papillomatosis (Figure 1D) [33/710 (4.6%)] and habronemiasis [30/710 (4.2%)]. Other skin lesions represented 25.3% of all cases studied. Out of 55 cases of SCC, 14 were observed in the skin, 24 were in the penile or vulvar mucosa, and in 17 cases, the lesion location was not mentioned in the protocol.

From the 30 cases of habronemiasis observed, 21 occurred from January to May, five between June and July, three in October and one in November. From the 67 cases of pythiosis observed, 52 occurred from January to May, seven in June, two in July, two in August and one case per month in the other months of the year.

From the 710 diagnoses, 320 (45.1%) were females, and 246 (34.6%) were males. In 144 cases (20.2%), the gender was not mentioned in the protocol. Regarding sarcoid, 119 females and 96 males were diagnosed with the disease. In 19 protocols, the breed of the horse was not specified. The breed most affected by skin lesions was the Crioula, with 310 cases (43.6%), followed by horses without a specific breed in 160 cases (22.5%). Other breeds affected were the PSI (40), Quarter Horse (8), Arab (5), Percheron (5), Appaloosa (3), Pony (2) and Brazilian Equestrian (1), totaling 64 cases (9.0%). In 176 cases (24.7%), the breed of the horse was not reported in the protocol.

The age of the affected horses ranged from 2-5 years in 230 cases (32.3%), 6-10 years in 166 cases (23.3%), 11-15 years in 57 cases (8.0%), up to 1 year in 48 cases (6.7%) and above 16 years in 34 cases (4.7%). In 175 samples (24.6%), there was no information on the age of the animals (Table 1).

DISCUSSION

According to the results of the present study, the most frequently observed skin disease in horses from the southern region of Rio Grande do Sul was sarcoid, representing almost a third of the observed cases (32.96%). In the central region of the state, this tumor represented 57.4% of lesions diagnosed in this species (SOUZA et al., 2011). According to the literature, this tumor is the most common tumor in equines (CHAMBERS et al., 2003; LLOYD et al., 2003; SCOTT & MILLER, 2003; PASCOE, 2005; BORZACCHIELLO et al., 2009).

Table 1-Prevalence of skin lesions diagnosed in horses in southern Rio Grande do Sul region according to age.

Diagnosis	to 1 year (%)	2 to 5 years (%)	6 to 10 years (%)	11 to 15 years (%)	> of 16 years (%)	N.I. ¹ (%)	Total	%
Sarcoid	14 (6.0)	121 (51.7)	55 (23.5)	6 (2.5)	3 (1.2)	35 (14.9)	234	32.9
Exuberant granulation tissue	6 (7.4)	23 (28.4)	27 (33.3)	6 (7.4)	2 (2.47)	17 (20.9)	81	11.4
Pythiosis	7 (10.4)	14 (20.9)	22 (32.8)	3 (4.4)	6 (8.9)	15 (22.3)	67	9.4
SCC ²	-	4 (7.2)	12 (21.8)	15 (27.2)	11 (20.0)	13 (23.6)	55	7.7
Papillomatosis	6 (18.1)	11 (33.3)	4 (12.1)	2 (6.0)	1 (3.0)	9 (27.2)	33	4.6
Habronemiasis	2 (6.9)	7 (24.1)	5 (17.2)	3 (10.3)	1 (3.4)	12 (41.3)	30	4.2
Dermatophilosis	-	5 (25.0)	5 (25.0)	1 (5.0)	-	9 (45.0)	20	2.8
Dermatophytosis	1 (8.3)	4 (33.3)	4 (33.3)	-	-	3 (25.0)	12	1.6
Fibroma	-	4 (36.3)	4 (36.3)	3 (27.2)	-	-	11	1.5
Fibrosarcoma	1 (11.1)	1 (11.1)	3 (33.3)	-	-	4 (44.4)	9	1.2
Melanoma	-	1 (16.6)	2 (33.3)	1 (16.6)	1 (16.6)	1 (16.6)	6	0.8
Lymphoma	1 (16.6)	3 (50)	1 (16.6)	-	-	1 (16.6)	6	0.8
Hemangioma/hemangiosarcoma	1 (33.3)	2 (66.6)	-	-	-	-	3	0.4
Mast cell tumor	-	-	-	2 (100)	-	-	2	0.2
Inespecific dermatitis ³	3 (7.6)	11 (28.2)	8 (20.5)	4 (10.2)	1 (2.5)	12 (30.7)	39	5.4
Other diagnosis	6 (8.3)	15 (20.8)	12 (16.6)	7 (9.7)	5 (6.9)	27 (37.5)	72	10.1
Inconclusives	-	4 (13.3)	2 (6.6)	4 (13.3)	3 (10.0)	17 (56.6)	30	4.2
Total	48 (6.7)	230 (32.3)	166 (23.3)	57 (8.0)	34 (4.7)	175 (24.6)	710	100

¹ NI= not informed; ²SCC= squamous cell carcinoma; ³dermatitis with unknown etiology.

The etiology of equine sarcoid is associated with bovine papillomavirus type-1 and 2 (BPV-1 e BPV-2) (CHAMBERS et al., 2003; BORZACCHIELLO et al., 2009), and a genetic predisposition may be involved (BORZACCHIELLO et al., 2009). The high frequency of sarcoid in horses in southern Brazil could be explained by the common use of horses in the handling of beef cattle farms. Extensive cattle raising is one of the most important economic activities of this region and enables direct contact between these species, thus increasing the exposure of horses to the bovine virus. The Crioula breed was the most affected in this study. This result most likely occurred because in the southern Rio Grande do Sul region, this breed is the most numerous and the most commonly used for rural and sporting activities (PIEREZAN, 2009). Compared to racing animals, saddle breeds, such as the Crioula breed, are more predisposed to develop sarcoid due to closer contact with cattle (SCOTT & MILLER, 2003).

Exuberant granulation tissue was the second most frequent lesion observed in this study, with the largest number of cases occurring in horses between 2 and 10 years old. It has been noted that horses are susceptible to trauma and that exuberant granulation tissue may result from these traumas

(THEORET et al., 2013). Exuberant granulation tissue is a common condition that affects mainly animals older than six months. According to these authors, this injury has a major financial impact, creating aesthetic problems for horses.

Pythiosis was the third most frequently observed disease in horses, representing 9.44% of skin diseases. This percentage is higher than that found in the central region of Rio Grande do Sul, which was reported as 8.3% of 139 skin samples from horses in a period of 10 years (SOUZA et al., 2011). The high prevalence of pythiosis in the southern region of the state is associated with favorable epidemiological conditions, such as large fields subject to frequent flooding (GRECCO et al., 2009). Pythiosis, despite having a lower prevalence than sarcoid in the southern region of the state, results in considerable economic losses because it often leads to death (MARCOLONGO-PEREIRA et al., 2012).

In the present study, SCC (7.75% of cases) was the fourth most common skin lesion diagnosed in horses. However, the rate was lower than that found in the central region of the state where this tumor was the second most prevalent lesion observed, representing 10.2% of the cases of skin tumors in horses (SOUZA et al., 2011).

In a previous study in southern Rio Grande do Sul, 6 cases of SCC were diagnosed (54.5%) in horses out of a total of 11 skin tumors of epithelial origin in the period between 1978 and 2002 (RAMOS et al., 2008). In the present study, it was observed that since 2002, the diagnosis of SCC in horses has increased considerably in absolute numbers from six to 55 tumors diagnosed. This is most likely due to the significant increase in equines referred to the LRD/UFPel in recent years (SCHILD et al., 2011).

According to this study, equine papillomatosis in the southern region of the state is not an important skin disease, having been diagnosed in only 4.65% of cases. Apparently, this lesion is associated with a bovine papillomavirus (RADOSTITS et al., 2007). In three cases, the lesions were located near the nostrils and labial commissures.

It has been noted that papillomas are more common on the penis and vulva, and the skin is the third most frequent location (JUNGE et al., 1984).

Habronemiasis was the sixth most commonly observed skin disease in horses in this study. Most cases occurred between January and May because the fly population responsible for this skin disease is higher in this period (BERNE, 2007). The similarity between the macroscopic skin lesions of habronemiasis and pythiosis (MACIEL et al., 2008), the location of the lesions (mainly in the limbs and face) and the similar time of occurrence for both diseases highlights the importance of histopathology, including conducting special staining techniques and immunohistochemistry to confirm a diagnosis (MARCOLONGO-PEREIRA et al., 2012). These methods also allow for the differentiation of exuberant

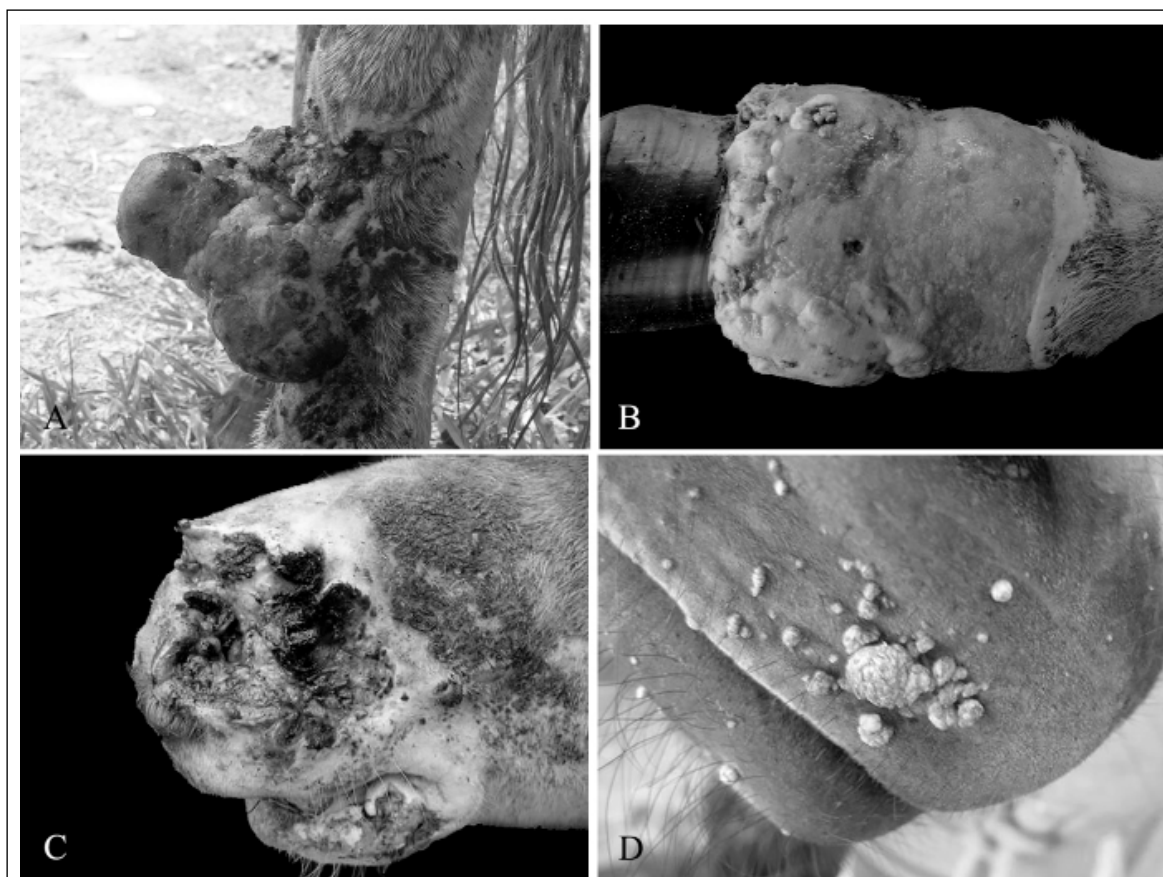


Figure 1- Dermatopathies observed in horses in southern Rio Grande do Sul (A) Sarcoid. Proliferative and ulcerated mass with a vegetative aspect on the distal portion of the left hind limb. (B) Pythiosis. Hemorrhagic, moist, and ulcerated lesion with kunkers in the distal portion of the left forelimb. (C) Squamous cell carcinoma. Ulcerated lesion with hemorrhage forming cavitation in the skin of the muzzle and reaching the nostrils. (D) Papillomatosis. Multiple verrucous, pedunculated nodules of different sizes on the skin near the lip.

granulation tissue, which is a chronic disease that presents macroscopic lesions similar to pythiosis and habronemiasis and represented 11.4% of diagnoses in the present work.

Melanoma is a skin neoplasm whose prevalence can vary from 4% to 15% of skin tumors in horses (RISSI et al., 2008). In the present study, melanoma was observed in a small number of animals at a percentage of 0.8%, which was similar to that determined by SOUZA et al. (2011). It is likely that the true incidence of melanoma is higher, but because of the easily identifiable clinical signs, the number of samples submitted for histopathological examination is reduced.

Regarding the gender of the animals with skin diseases, from the 710 protocols examined, 144 had no information about sex. Males accounted for 34.6% and females 45.0% of total diagnoses. This is most likely because females are more economically important to the owners, which leads to more stringent healthcare. It should be noted that with respect to sarcoid, other studies have shown a greater incidence of disease in females, with a male:female ratio of 0.7 (BRUM et al., 2010.). In the present study, the male:female ratio was 0.8.

Samples of skin diseases were higher in horses between 2-5 years (35.1%) and 6-10 years (25.0%). In animals affected with sarcoid, 51.7% were between 2-5 years, and 23.5% were between 6-10 years. This age group has been described as the most frequently affected with this disease (SCOTT & MILLER., 2003; BRUM et al., 2010; SOUZA et al., 2011). The occurrence of sarcoid in young equines is most likely due to the predilection of the papillomavirus, which is part of the etiology of sarcoid, for young animals. This is similar to bovine papillomatosis, which also occurs in this age group (HARGIS & GINN, 2013).

SCC was one of the few skin diseases that was observed in horses older than 11 years of age. These results are in agreement with the literature, which reports that the incidence of certain neoplasms increases with age (RAMOS et al., 2008).

The present study showed that diseases that affect the skin of horses represent approximately 32% of the illnesses observed in the region where the study was conducted. The most prevalent disease was sarcoid, occurring in over 30% of cases.

The skin diseases observed in horses in this study, in general, are not life threatening diseases. They can, however, cause aesthetic damage, resulting in the rejection of the animal for purchase. In some cases, such as papillomatosis, animals are prevented

from participating in collective sports and fairs. Economic losses refer to money spent on treatments and surgeries.

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