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Idiopathic seasonal alopecia in horse: case report

[*Alopecia sazonal idiopática em equino: relato de caso*]

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ABSTRACT

This report describes the first case of idiopathic seasonal alopecia in a horse in Brazil. The disease is of unknown etiology, characterized by alopecic processes in the thoracic and lateral abdominal regions, in a bilaterally symmetrical way. An eight-year-old male grade horse was treated presenting hair loss in a bilaterally symmetrical manner in the arm and abdomen areas, without any other associated clinical signs. The areas with alopecia showed no pruritus, inflammation or scaling. On the epidermis, the histological evaluation presented irregular hyperplasia, hyperpigmentation, compact orthokeratosis, edema and an inflammatory infiltrate. The hair follicles were active and containing hair shaft. The case was monitored with photographic records for two consecutive years (2012 to 2014), in which the hair fall occurred at the end of autumn with spontaneous hair growth in the middle of the summer. The diagnosis was based on the history, histopathology and photographic follow-up performed. Although mentioned in the literature, this is the first clinical and pathological description of such disorder affecting an equine in Brazil.

Keywords: horse, seasonal flank alopecia, histopathology

RESUMO

Relata-se o primeiro caso de alopecia sazonal idiopática em um equino no Brasil, doença de etiologia desconhecida, caracterizada por processos alopécicos, nas regiões torácicas e abdominais laterais, de forma simétrica bilateralmente. Um equino mestiço, macho, de oito anos de idade, foi atendido sob queixa de perda dos pelos em regiões do tórax e do abdômen, simétrica bilateralmente, sem qualquer outro sinal clínico associado. As regiões alopécicas não apresentavam prurido, inflamação nem descamação. A avaliação histológica revelou, na epiderme, hiperplasia irregular, hiperpigmentação e ortoqueratose compacta, edema e infiltrado inflamatório. Os folículos pilosos estavam ativos e contendo hastes de pelos. O caso foi acompanhado com registros fotográficos durante dois anos consecutivos (2012 a 2014), com a queda do pelo acontecendo no final do outono e com retorno espontâneo em meados do verão. O diagnóstico baseou-se no histórico, na histopatologia e no acompanhamento fotográfico. Mesmo sendo mencionada na literatura, esta é a primeira descrição clínico-patológica de tal distúrbio acometendo um equino no Brasil.

Palavras-chave: cavalo, alopecia sazonal do flanco, histopatologia

INTRODUCTION

Idiopathic seasonal alopecia (Knottenbelt, 2009), also known as cyclic flank alopecia (Gomes *et al*., 2008) and recurrent flank alopecia (Bassett *et al*., 2005) is an uncommon dysplasia of unknown etiology. The disease is characterized by symmetrical and bilateral hair loss in certain regions, occurring in seasonal episodes and without any association to other clinical or historical signs. Alopecia usually begins at the end of autumn with spontaneous hair deterioration from spring to midsummer (Knottenbelt, 2009; Gomes *et al*., 2008; Bassett *et al*., 2005; Mueller, 2003), which suggests a possible relation with photoperiodical changes

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from one season to another (Bassett *et al*., 2005; Paradis, 2000; Curtis *et al*., 1996).

The lateral thoracic and abdominal regions, mainly lateral folds of the flank, are the commonly affected areas (Gomes *et al*., 2008; Bassett *et al*., 2005). According to Muntener *et al*. (2012) and Gomes *et al.* (2008), affected dogs usually show symptoms in consecutive years, in which the damaged coat surface can display a more intense coloring than the rest, reduced shine and disorganized growth.

Histopathological signs frequently found in affected areas include hair follicle atrophy associated to superficial hyperkeratosis and variable skin pigmentation with the hair sheath presenting a wavy appearance that is usually in the telogen phase (Scott, 1990). According to Bassett *et al.* (2005), mild lymphocytic infiltrate can be found in the peripheral areas of the lesions. Although not being a frequent finding, it may be related to the secondary immune response against alopecia. However, histopathological findings are not determinant for the diagnosis (Knottenbelt, 2009).

The lack of information on the disease and the fact that it presents alternating periods, both hinder the efficiency of the therapeutic trials applied (Bassett *et al.*, 2005). However, since it does not cause any deleterious changes to the subjects, only alterations in the aesthetic aspect, clinical protocols are not recommended (Knottenbelt, 2009). Even though no consistent results were obtained, Paradis (2000) proposed the use of hormonal therapies in dogs, considering that the course of the disease is dictated by photoperiodism. As there are no reports in the literature of this condition in horses, no treatment was presented.

This study aims to describe the clinical and histopathological findings and provide a photographic follow-up of idiopathic seasonal alopecia in a half-breed horse.

CASE REPORT

An eight year old gelding horse, weighing 370kg, used for traction, was attended at the Veterinary Teaching Hospital of Santa Catarina State University, in Lages, Santa Catarina, Brazil. The horse presented hair loss in specific regions without pruritus, inflammation or scaling (Figure 1A, 1B and 2). In the clinical exam, the animal exhibited vital parameters within normal range.

The animal was acquired by its owner two years ago, having ever since exhibited alopecia. The disease appeared and receded spontaneously and did not manifest any color neither texture alteration to the coating. Furthermore, the owner did not have any previous record of the same condition and no medication was ever applied.

In the course of assessment, well-delimited alopecia regions were observed in the brachial regions, extending from the neck of the scapula following caudoventrally on the brachial triceps muscle and the middle and ventral thirds of the lateral thoracic region, all in a bilaterally symmetrical manner.

A punch biopsy (8mm) of the affected areas was carried out. The resulting samples were preserved in a 10% formalin solution and forwarded to the Laboratory of Animal Pathology, from Santa Catarina State University, to perform histopathological exam. The results of the epidermis analyses revealed a series of altered characteristics, including irregular hyperplasia, hyperpigmentation, compact orthokeratosis, vasodilation, edema and an inflammatory infiltrate, predominantly monomorphonuclear in a perivascular pattern containing mastocytes, lymphocytes and plasmocytes. The hair follicles were active and displayed hair shafts. Additionally, the samples were stained with a special fungi dye known as Periodic Acid-Schiff (PAS c/d), which turned a negative outcome.

A monthly clinical follow-up with a photographic record was performed from August 2012 to May 2014. Throughout this period, alopecic episodes were repeated annually, always in the same places with the same pattern of hair loss and hair growth. There were shifting phases of complete alopecia and complete reestablishment of the coat, occurring respectively in winter and summer seasons (Figure 1A to H). Since the condition did not cause any harm to the animal, a decision not to carry out any drug treatment was taken.

Figure 1. Gelding, eight years old, affected by idiopathic seasonal alopecia, presenting alopecic areas on the arm, abdomen and thoracic limbs, monitored over a period of two years. August 2012 (A and B) during winter, October 2012 (C and D) during spring, July 2013 (E and F) during winter and February 2014 (G and H) during summer.

Figure 2. Alopecic areas on the arm and thorax on the left side, during the winter. Note the regular appearance of the edges and absence of peeling or alteration of skin color.

DISCUSSION

Due to the lack of information on equines regarding the disease of interest, a lot of forethought went into establishing the diagnosis, which was especially based upon the history of seasonality and patterns of hair growth and loss observed in the length of the clinical and photographical follow-ups. The histopathological exam does not confirm the condition in equines (Knottenbelt, 2009), and it is only appropriate for discarding other possible causes. Besides that, the histopathological findings also bear a certain degree of variability, depending on the disease stage in which the samples are collected (Paradis, 2000).

Taking into account that the animal concerned is mostly utilized for machine traction and carrying purposes, it is presumed that the lesions would appear because of excessive harness friction. However, that could not be confirmed, since the affected regions did not have direct contact with any apparatus and the horse was put to work with the same harness equipment throughout the whole year.

Paradis (2000) and Bassett *et al.* (2005), in their studies with canines portraying the same disease, propose that the etiology could be related to the photoperiodism, due to its seasonal and cyclic character. The loss of hair starts together with the decrease in daylight, and the hair tends to grow back as the daylight increases, which in the south hemisphere corresponds to the months from December to June and July to December respectively. The case study followed shows a similar monthly pattern. Knowing that the metabolism of the pineal gland controls daily and seasonal daylight cycles in vertebrates, there could be a relation between idiopathic seasonal alopecia and the concentration of circulating melatonin, a hormone produced by the gland. Mattos *et al.* (2000), in a study with female buffalos, managed to demonstrate how the plasma concentrations of melatonin during the months from March to May are significantly lower than from December to January. In this case, the possible relation to be reached is that during the months with lowered sunlight the animal produces less melatonin; therefore, it is prone to have the disease. However, in other study carried out on dogs with idiopathic seasonal alopecia, in which melatonin was administered to the animals, the same result consistency was not apparent. Both treated and untreated individuals had a return in hair growth. Even though the treated subjects developed a milder form of the disease than when left untreated (Paradis, 2000), a relation with endocrine pathologies was not confirmed (Daminet and Paradis, 2000; Curtis *et al*., 1996).

In studies describing the disease in dogs, the diagnosis was strongly based on the histopathological findings, in which it was common to observe superficial hyperkeratosis, atrophy of the hair bulbs and absence of inflammatory processes or infection. However, Knottenbelt (2009) describes that histopathology does not become crucial for confirmation of the diagnosis in equines, but it is recommended to rule out other potential causes of bilaterally symmetrical alopecia.

The symmetrical bilateralism in alopecia is also a common clinical sign in other diseases, particularly found in endocrine dysfunctions. Good examples are cases of hypothyroidism and hyperadrenocorticism, which are typical causes of alopecia in dogs, but a rare occurrence in equines (Stannard, 2000). Such diseases, although presenting a variety of other important signs, do not exhibit cyclicity and the symptoms disappear after the treatment.[2] Because of that, a differential diagnosis is of extreme importance when dealing with alopecia. In the case here described, diseases to deliberate upon include alopecia areata, telogen effluvium, arsenic or mercury poisoning, actinic dermatitis, pemphigus foliaceus, systemic erythematosus lupus, hypersensitivity to ectoparasites and pharmacodermia (Knottenbelt, 2009). The first two will be further discussed and detailed given the closer clinical and epidemiological proximity to idiopathic seasonal alopecia. Other conditions were described in the literature as being able to lead to alopecic areas, although unrelated to an infectious component and never displaying bilateral symmetry and seasonality.

Alopecia areata is a disease that triggers hair loss due to inflammatory changes inside and around the hair bulb as well as in the deeper parts of the hair follicle. This condition was observed in several species, including humans, dogs, cats and rats. In equines, this kind of lesions have been reported on the head, mane, body and tail areas (Hoolahan *et al*., 2013). This Pathogenesis was linked to autoimmune events, which exhibited the production of antibodies that target specific sites on hair follicles (Olivry *et al*., 1996). The disease is histologically characterized by bulbar and peribulbar lymphocytic infiltration, mainly in the hair follicles anagen phase. In addition, there may be neutrophils in adjacent areas (Hoolahan *et al*., 2013). In more advanced stages of the disease, there is a predominance of hair follicles in telogen phase with dysplastic characteristics, which are frequently associated with mild fibrosis around atrophied hair bulbs (Hoolahan *et al*., 2013). Furthermore, defects in hoof growth may occur in horses with the disease (Stannard, 2000). The histopathological features in horses are sometimes similar to those found in dogs with idiopathic seasonal alopecia (Gomes *et al*., 2008; Bassett *et al*., 2005), but the signs are generally restricted to localized areas and remain static throughout the course of the disease (Knottenbelt, 2009).

Telogenic effluvium is a non-pruriginous alopecia that affects several species, including equines. It occurs due to the pronounced hair loss during the transition from the anagen phase to the catagen and telogen phases. Usually, a follicle produces hair during the anagen phase, followed by a regression period in the catagen phase and culminating in the telogen phase, in which hair growth ceases. After a certain period, which in humans is about four to six weeks, the follicle resumes the anagen phase (Harrison and Sinclair, 2002). Its pathogenesis is associated with periods of known or suspected stress, febrile episodes or ailment, which are present a few days or months before the alopecia picture occurrence (Knottenbelt, 2009). The horse owner had not reported such conditions and there were no clinical manifestations of any disease throughout the period in which the animal was monitored.

Physiological or pathological stresses such as gestation, lactation, shock, fever, surgery or anesthesia are described as factors that trigger severe hair loss, but then again, most of the time there is a history related to clinical findings (Jubb and Graydon, 2007). Information about this disorder in animals is still scarce in the literature.

Kolm and Zentek (2004), described a similar condidtion to the case in this article where a population of Icelandic horses in the northern hemisphere had annual relapses of alopecia, without other alterations after their relocation. There were negative results for bacterial cultures and dermatophytes scraped from the skin. In this occasion, dosages with serum concentrations of Ca, Cu, Zn, Fe and Mn were made, all in normal levels for the species. Despite that, food supplements containing vitamins, iodine, cobalt

and selenium were opted, and as a result, no alopecic episodes were observed in the subsequent year. On the other hand, in the current case study, there are no changes to the environment. However, it was not possible to obtain information about the previous owner and his handling. The corporal score of the animal was adequate and kept constant throughout the evaluation, suggesting an appropriate food management was conducted.

CONCLUSION

The idiopathic seasonal should be considered among the differential diagnosis of non-pruriginous symmetric alopecia cases in horses. The alopecic pattern of this disorder in equines is similar to that described in dogs.

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