STEPHANOFILARIASIS IN DAIRY CATTLE: THE NEED FOR EARLY DIAGNOSIS AND TREATMENT

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ABSTRACT

Stephanofilariasis is a disease caused by a nematode, globally widespread, that affects dairy cattle causing skin lesions near the mammary gland. Therefore, the objective of this study was to report the occurrence of an outbreak of stephanofilariasis in dairy cows in a property from Southern Brazil, focusing on the diagnosis and treatment. Stephanofilariasis was suspected based on the appearance and location of the lesion. Skin scrapings and lesion imprints confirmed the clinical suspicion. Since the cows were lactating, treatment was based on topical organophosphate trichlorfon 6% for seven days. Early diagnosis helps to better curative efficacy.

Key-words: cows, *Stephanofilaria* sp, therapy

ESTEPHANOFILARIOSE EM VACAS LEITEIRAS: A NECESSIDADE DE UM DIAGNÓSTICO E TRATAMENTO PRECOCE

RESUMO

Estephanofilariose é uma doença causada por um nematóide, amplamente difundida, que afeta vacas leiteiras, provocando lesões na pele perto da glândula mamária. Portanto, o objetivo deste estudo foi relatar a ocorrência de um surto de estephanofilariose em vacas leiteiras em uma propriedade no Sul do Brasil, com foco no diagnóstico e tratamento. A suspeita de estephanofilariose foi baseada na aparência e localização da lesão. Raspados e *imprints* da lesão confirmou a suspeita clínica, encontrou-se a forma larval. As vacas em lactação receberam um tratamento baseado em organofosfato topico, isto é triclorfon 6% durante sete dias. O diagnóstico precoce contribui para uma melhor eficácia curativa.

Palavras chave: vacas, *Stephanofilaria* sp, terapia

ESTEPHANOFILARIOSIS EN VACAS LECHERAS: LA NECESIDAD DE UN DIAGNÓSTICO Y TRATAMIENTO PRECOZ

RESUMEN

Estephanofilariosis es una enfermedad causada por un nematodo, generalizada, que afecta las vacas lecheras causando lesiones en la piel cerca de la glándula mamaria. Por lo tanto, el objetivo de este estudio fue describir la ocurrencia de un brote de estephanofilariosis en vacas lecheras en una granja en el sur de Brasil, con un enfoque en el diagnóstico y el tratamiento. La sospecha de estephanofilariosis se basa en la apariencia y localización de la lesión.

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Raspados y *imprints* de la lesión confirmó la sospecha clínica, se encontró la forma larval. Las vacas lactantes recibieron un tratamiento a base de organofosfato topico, o sea 6% triclorfón durante siete días. El diagnóstico precoz contribuye para una mejor eficacia curativa.

Palabras-clave: vacas, Stephanofilaria sp terapia

INTRODUCTION

Stephanofilariasis is caused by nematodes of the genus *Stephanofilaria*, a chronic disease that occurs in dairy cattle, with prevalence in the summer because it is transmitted by flies (1, 2). In most cases, the clinical diagnosis is through the identification of skin lesions that may vary in size with itching and constant presence of flies, if untreated may continue for years (1), which can cause the onset of mastitis and myiasis. According to the literature, horn flies (*Haematobia irritans*) are intermediate hosts that feed on skin lesions and ingest the microfilariae, and in two to three weeks it develops the third larval stage (infective form), being introduced by bite in the skin of the definitive host, i.e., bovine (3).

Treatment is necessary to prevent the spread of the nematode to the herd, but can be difficult and time consuming, which often makes treatment uneconomical (4). Organophosphates for topical use (5), and association of ivermectin (6) and levamisole (7) are commonly used for treatment.

On farms located in Rio Grande do Sul and Santa Catarina states, veterinarians, animal scientists and agricultural experts have been questioned about the presence of skin lesions in the midline and cranial to the udder that do not get better despite treatment made by producers. The technicians who provided this information also mentioned that approximately 30% of large dairy farms in Southern Brazil have had isolated cases of stephanofilariasis (personal communication), but the occurrence of an outbreak, with various animals affected in the same property at the same period are rare. As a result, the objective of this study was to report an outbreak of stephanofilariasis occurred in dairy cattle in Southern Brazil, with emphasis on diagnosis and treatment.

CASE REPORT

In December 2011 (warm season of the year), on a small farm with Holstein dairy cattle, located in Alegria, Rio Grande do Sul State, Brazil, the owner asked for veterinarian assistance because of the presence of skin lesions (Figure 1A, B) located cranially to the udder of nine lactating cows in a total of 13 animals of the same category. According to the owner the lesion first appeared in one of the cows in November and after 15 days was observed in all other animals. The lesions look like ulcerated wound with crusted and sero-sanguineous exudate in the ventral midline cranially to the udder (Figure 1). Myiasis was observed on five of these cows. Initially, producers used a product with larvicidal, repellent and healing action (Lepecid BR Spray®) which eliminated fly larvae. As reported by the owner, all lesions regressed in all animals during treatment, but relapsed a few days after the end of therapy with Lepecid spray.

The clinical diagnosis from the veterinarian was stephanofilariasis based on anamnesis, wound characteristics and high incidence of similar cases in the region. To confirm the dignosis, the skin was scrapped and imprints were stained with Romanowsky for microscopic observation. Nematode larvae were visualized in the collected material (Figure 1C). A topical treatment based on organophosphate trichlorfon 6%, as suggested by the literature was used (2).

Unaware of the existence of a commercial product specific for treatment of this parasitosis, a handmade mixture was prepared. The active ingredient was mixed with vaseline, forming a paste for topical use, which was placed over the entire area of the wound once a day (in the morning) for seven consecutive days. In the afternoon, daily treatment with Lepecid BR Spray® was maintained for the purpose of healing and repellent. The treatment ended after seven days when the wounds were healing, without secretions and with the central opening substantially closed. By owner´s request, the cows were examined again on the tenth day after the treatment, when it was found that three cows had recurrence of the skin lesions due to the presence of secretion. In other animals the wound was fully closed and healed with initial growth of hair in the affected area. For the three animals with recurrence, the same previous treatment was repeated for seven days, which this time had curative efficacy. It is important to point out that this property works with dairy cattle for 15 years, and during this period had no similar cases of this disease.

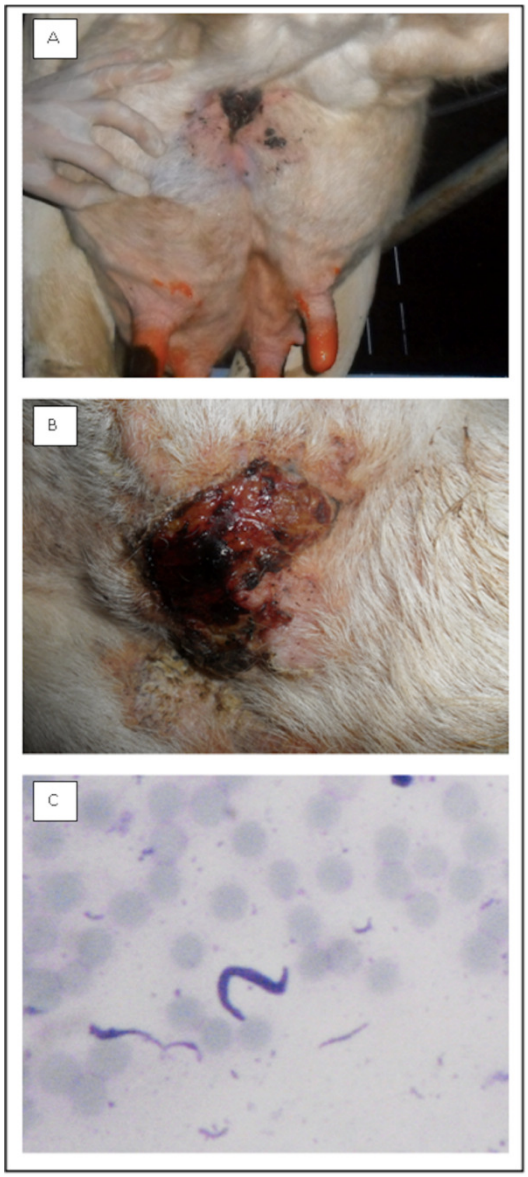

Figure 1. Skin crusty wound with serum-blood exudate located cranially to the udder of a Holstein cow (A and B) and larvae of *Stephanofilaria* sp harvested in imprints and stained with Romanoswisky method (40x) (C).

During the clinical examination the presence of immature and adult tick (*Rhipicephalus microplus*) and large numbers of flies were found in the animals. A total of 30 flies were caught and identified as *Haematobia irritans* (n = 17), *Musca domestica* (n = 9) and *Stomoxys calcitrum* (n = 4). The presence of nematode larvae in flies was not investigated.

DISCUSSION AND CONCLUSIONS

This study reports an outbreak of nematode *Stephanofilaria* in 69.2% of dairy cows on a farm in Southern Brazil. According to the literature, this parasite has a wide geographical distribution, but generally the number of infected animals per herd is small. Stephanofilariasis cases in animals (8-10) and humans (11) as well as epidemiological data, diagnosis and treatment have been described by researchers.

The nematode *Stephanofilaria* sp. needs some vector for its spread and transmission, being flies considered a potential vector (3). *H. irritans* and *S. calcitrans* are the main vectors and disseminators of infectious diseases and are bloodsucking ectoparasites of economic importance in Brazil, causing large losses and great economic impact on livestock production. These insects can also be vectors of several pathogens, including helminths *Stephanofilaria* sp. (3, 12). According to researchers the major outbreaks of flies occur in rainy warm seasons in Brazil, as the period from December to March (8), the same period with greater incidence of stephanofilariasis, as was observed in this study. Therefore, we believe that the control of flies would be a way to prevent the spread of disease.

The stephanofilariasis usually occurs in dairy cattle, which is characterized by causing lesions on cranial-ventral region of the mammary gland (10), similar to what was observed in this study. After nematode infection the prepatent period ranges from 3 to 8 weeks (3), subsequent the wound increases progressively. In this study it was found that the size of the injuries varied between measurements described by Miyakawa, Reis and Lisbôa (13), ie, between 0.78 cm² and 44.16 cm². The skin lesions are characteristic of the disease and help in the diagnosis along with the anamnesis (8, 9, 14). Severe itch causes generalized unease with constant licking of the wound, leaving the animals stressed and consequently there is a reduction in milk production, as reported by the owner of this farm.

A study by Miyakawa, Reis and Lisbôa (9) compared two methods in diagnosing Stephanofilariasis from tissue collected by biopsy from the edge of the lesions: histopathologic and direct examination of the sediment of isotonic saline solution in which the tissue remained soaked. The authors found that on direct examination was possible to find the causative agent in all samples examined, unlike the histopathological which did not detected the presence of the parasite. Printing with a glass slide containing wound exudate, followed by staining with Giemsa, can be used in the diagnosis of nematode (15), a method used successfully in the current study.

Controlling flies infestations on cattle would be a prophylactic measure in order to prevent the spread of disease among animals. The treatment of *Stephanofilaria* sp infection has been performed with 5-10% ivermectin and organophosphates (Neguvon ® - Merck Manual). Ivermectin has limited in lactating cows (90.48%) and the treatment cannot be carried out because of the possibility of drug residues in milk (13), which is why this product was not used in this study. The topical use of organophosphates has been an effective treatment option, but time consuming with daily applications. But according to researchers successful treatment often is related to the early diagnosis, when the lesion is still small with isolation of infected animals in order to prevent the spread to other animals (9, 16, 17). A commercial drug with specific indication for this disease could also facilitate its treatment.

Five species of the genus Stephanofilaria are associated with skin lesions in cattle, including *S. dedoesi*, *S. stilesi*, *S. kaeli*, *S. assamensis* and *S. okinawaensis* (10), but in Brazil

it is not known which species are prevalent, as in this study. In this paper we report an outbreak of stephanofilariasis in dairy cows, confirmed by clinical diagnosis, laboratory and therapeutic. Topical treatment with trichlorfon was 100% effective in curing the disease. Probably the outbreak occurred due to environmental conditions (temperature, humidity and abundance of vectors), and lack of specific immunity against this nematode since this diseases was never reported before on this herd.

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