

## DIAGNOSIS AND TREATMENT OF PURPUURA HEMORRHAGIC IN EQUINE SECONDARY TO STREPTOCOCCAL ADENITIS - CASE REPORT

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**Abstract:** The creation of horses with high zootechnical value has generated great economic interest. Among the concerns of the breeders must be the health of the animals. Diseases such as equine adenitis can have serious consequences, including hemorrhagic purpura. This paper reports a case of hemorrhagic purpura in an 8-year-old Mangalarga Marchador horse, resulting from an episode of equine adenitis. On clinical examination, the horse had a temperature of 39°C, subcutaneous edema and petechial hemorrhages in the nasal, oral and ocular mucous membranes. When asked about the history, the owner reported that twenty days before the presentation to the clinic, the horse showed respiratory symptoms, with mucopurulent inflammation in the upper respiratory tract, having been treated at the time with a single dose of pentabiotic, and recovered well, when he started to have fever and edema throughout the body. Based on what was reported, hemorrhagic purpura resulting from streptococcal infection was suspected. Therapy was established with an application of 20mg of IV dexamethasone, followed by antibiotic therapy with procaine benzylpenicillin (22,000UI/Kg) and dihydrostreptomycin (22mg/Kg IM every 24h), and phenylbutazone (2.2 mg/Kg/day EV) for 10 consecutive days. Two applications of Dimethylsulfoxide 99.2% (40ml in 1L of glucose solution/IV/24h) were made, and warm compresses were applied to the edema sites twice a day until the sixth day of treatment. To confirm the suspicion, serology was performed for *Streptococcus equi* which had a titre of 0.354 (negative reference value: 0.147). The horse responded well to the therapy, showing daily improvements until the complete disappearance of symptoms on the seventh day.

**Keywords:** DIC, edema, croup, *Streptococcus equi*

## INTRODUCTION

The creation of horses with high zootechnical value has generated great economic interest, considerably increasing the concern of breeders with the health of the animals<sup>9</sup>. Among the diseases that limit the activities of horses, pathologies that affect the respiratory system are second only to diseases that affect the musculoskeletal system, generating significant economic losses. Therefore, the early diagnosis of respiratory diseases in the equine species is an essential tool for a quick return of the animals to their activities, as well as in the prevention of secondary complications, which may result in sequelae or death of the animal<sup>8</sup>.

Equine adenitis is a bacterial infection that affects the upper respiratory tract of horses and is characterized by mucopurulent inflammation, fever, apathy, nasal discharge, progressing to cough, anorexia and difficulty breathing<sup>8,9</sup>. It has a worldwide distribution, which is a pathology responsible for considerable economic losses, due to the high cost of treatment, control measures, and possible deaths<sup>8,9</sup>.

In only 10% of cases, equine adenitis progresses to hemorrhagic purpura, an important factor for the worsening of the animal's clinical condition, which can lead to death<sup>9</sup>. Hemorrhagic purpura is an acute immune-mediated vasculitis that usually affects animals convalescing from equine adenitis<sup>5</sup>. It is a pathology characterized by the presence of subcutaneous edema and hemorrhages of the type petechiae and suffusions, in the skin, mucous membranes, nose, mouth, eyes and viscera<sup>2</sup>. It is the result of immune complexes that contain IgA in the vessel wall, and may be directly related to immunization, streptococcal infection, drug administration and the presence of toxins<sup>3</sup>.

This report presents a case of hemorrhagic purpura in an equine, resulting from an

episode of equine streptococcal adenitis.

## **EQUINE ADENITIS AND HEMORRHAGIC PURPURA**

Also known as garrotilho, equine adenitis is a bacteriosis resulting from infection by *Streptococcus equi*, bacterium  $\beta$  hemolytic, penetrates through the mouth or nostrils by adhering to specific receptors on the tonsils and local lymph nodes. Transmission occurs directly between horses that are incubating the disease, those that are symptomatic, those that are carriers and convalescents, or indirectly through fomites<sup>4,8,9</sup>.

Clinical symptomatology generally appears after two weeks of exposure to the agent<sup>8,9</sup>. Affected animals have depression, lack of appetite, fever, initially serous nasal secretion, becoming mucopurulent and purulent in a few days, productive cough, pain on palpation of the mandibular region and increased volume of submandibular lymph nodes<sup>7,8,9</sup>. In the vast majority of cases, horses respond well to antibiotic therapy based on penicillin G, at a dose of 18,000 to 20,000 UI/Kg-1 and supportive therapy for 5 to 10 days<sup>8,9</sup>. Although the lethality of the disease is very low, it can lead to death from complications such as hemorrhagic purpura<sup>8,9</sup>.

In 10% of the cases, the evolution of the clinical case is due to precipitation in the capillaries of immunocomplexes against the etiological agent, causing severe edema in various parts of the body<sup>5,6</sup>. Healthy injured tissue with release of coagulation precursor cytotoxic substances the patient progresses to a picture of Disseminated Intravascular Coagulation<sup>6</sup>. With the activation of coagulation factors and inhibition of fibrinolysis, fibrin deposits occur, with poor removal from the microcirculation, the formation of thrombi, depletion of coagulation factors and platelet activation, resulting in hemorrhagic manifestations, significantly

aggravating the clinical picture of the patient<sup>6</sup>.

Hemorrhagic purpura is associated with the formation of immune complexes containing M-protein and specific conditions for a type III hypersensitivity reaction to occur: formation of low molecular weight immune complexes against an excess of soluble antigens that are not correctly eliminated by the circulation<sup>1,6</sup>. Patients have subcutaneous edema, petechial hemorrhages in mucous membranes, muscles and viscera, and in some cases glomerulonephritis<sup>1,6</sup>.

## **CASE REPORT**

An 8-year-old Manga Larga Marchador horse was attended at the original property with a complaint of having several "swellings" throughout the body. On clinical examination, the horse had a temperature of 39°C, subcutaneous edema and petechial hemorrhages in the nasal, oral and ocular mucous membranes. When asked about the history, the owner reported that twenty days before the presentation to the clinic, the horse showed respiratory symptoms, with mucopurulent inflammation in the upper respiratory tract, having been treated at the time with a single dose of pentabiotic.

He was recovering well, when he started to have a fever and swelling all over his body. Based on what was reported, hemorrhagic purpura resulting from streptococcal infection was suspected. Therapy was established with an application of 20mg of IV dexamethasone, followed by antibiotic therapy with benzylpenicillin-procaine (22,000 UI/Kg) and dihydrostreptomycin (22mg/Kg IM every 24 hours), and phenylbutazone (2.2mg/Kg/day IV) for 10 consecutive days. Two applications of Dimethylsulfoxide 99.2% (40ml in 1L of glucose solution/IV/24h) were made, and warm compresses were applied to the edema sites twice a day until the sixth day of treatment. To confirm the suspicion,

serology was performed for *Streptococcus equi* which had a titre of 0.354 (negative reference value: 0.147). The horse responded well to the therapy, showing daily improvements until the complete disappearance of symptoms on the seventh day.

## DISCUSSION

The option of treatment with associated antibiotics was not based on technical criteria. According to Viana (2014)<sup>10</sup>, the minimum dose of Procaine Penicillin recommended for horses is 20,000UI/kg/day and the dose of Dihydrostreptomycin is 10mg/kg/12 hours. In the reported case, Procaine Benzylpenicillin 20,000,000UI was used associated with Dihydrostreptomycin 20g in 100ml of vehicle, due to the non-existence of unassociated penicillin in the local market. By adjusting the Penicillin dose to 22,000UI/kg/day, it was observed that the Dihydrostreptomycin dose was doubled, increasing the risk of treatment due to its nephrotoxicity. The collection

of exudate made by puncturing one of the edemas to identify *Streptococcus equi*, sent to a human clinical analysis laboratory, showed a false negative result for bacterial growth, due to the use of an inappropriate culture medium for the cultivation of *Streptococcus equi*...

## CONCLUSION

The history involving respiratory disease, inadequate pentabiotic therapy, evolution and clinical signs such as subcutaneous edema and petechiae-type hemorrhages in the nasal, oral and ocular mucous membranes and the therapeutic response that resulted in the complete recovery of the animal allowed us to conclude that it was a case of hemorrhagic purpura. But confirmation by laboratory diagnosis can only be performed using the ELISA technique, serology for *Streptococcus equi*, which showed a titre of 0.354 (negative reference value: 0.147), showing a high concentration of antibodies.

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Picture 1. Equine with edematous and extensive swelling in the neck region in the acute phase of Purpura Hemorrhagica.