

Consequences of Canine Ehrlichiosis: Clinical Case Successfully Resolved

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Abstract

This work aims to report the case of a canine that survived erlichiosis with severe consequences of the disease, such as meningitis, hind limb paresis, circle walking, cerebrovascular accident. The onset of paresis was sudden, soon after a hygienic grooming. X-ray examinations ruled out suspected trauma. A cerebrovascular accident is suspected due to vasculitis found by electrocardiogram examination. Traditional treatment for doxycycline-based erlichiosis (200 mg) 1 comp. 2 x day for 24 days was recommended; anti-inflammatory drug Prednisone - IDB for 15 days, antianemic Erythros - 1 comp./day, Leucogen (H) 5 mL (2 x day) immunomodulator for platelet elevation and a peripheral and cerebral vasodilator Revimax - 1 comp./ day were the drugs of choice. The case seems to suggest that the bacterium, through the hematogenous route, reaches the intervertebral discs, paralyzing the pelvic limbs, bladder, anal sphincter and tail, and may even cause neurological disorders and even lead to death of the animal. Since paresis and stroke, as well as hydrocephalus and meningitis, clinical signs were much more atypical and are currently becoming more frequent.

Keywords: Canine Ehrlichiosis, Hemoparasitosis, Syndrome, Hemorrhage.

Introduction

The genus Ehrlichia currently comprises five species: Ehrlichia canis, E. chaffeensis, E. ewingii, E. murise, and E. ruminantium [1]. They are gram-negative bacteria and mandatory intracellular parasites of mature or immature hematopoietic cells, especially those that make up the mononuclear phagocytic system, such as monocytes and macrophages and, for some species, myeloid cells as neutrophils, for example, showing tropism for these cells [1]. Ehrlichia. ssp, responsible for canine monocytic ehrlichiosis (EMC), a disease considered endemic mainly in urban areas, where populations of the vector tick Rhipicephalus Sanguineus abound [2].

The pathogenesis of ehrlichiosis is related to the invasion of mononuclear cells by bacteria and dissemination via hematogenous pathway, affecting several organs, such as spleen, lymph nodes and liver [3, 4]. The inflammatory action of cells in the blood vessel wall causes vasculitis. As a consequence of the inflammatory process, there is a narrowing of the vascular caliber and ischemia in the region supplied by the vessel, and it may even occur to ischemia in the brain stem, promoting the appearance of stroke.

Ehrlichiosis is an infection that is characterized by different clinical changes, spreading in the acute, subclinical, and chron-

ic phases. The clinical signs are usually caused by disseminated lymph reticular hyperplasia and hematological changes, often with spinal hypoplasia in the chronic phase [5, 6]. The hematological abnormalities most frequently seen in natural infections are non-regenerative anemia, thrombocytopenia, and leukopenia [7, 8]. Thrombocytopenia is the main hematological finding observed in all stages of canine ehrlichiosis, mainly related to the destruction of platelets by autoimmune mechanisms, with decreased survival and aggregation capacity [5, 7-10].

In the chronic phase, clinical signs are absent or discreet in some dogs. However, in other animals, the signs can be severe and potentially fatal [11-13].

Thus, the aim of this study was to report a case of canine ehrlichiosis whose animal had a stroke due to vasculitis caused by narrowing of the vascular caliber and less blood passing through the vessel.

Case Description

A seven-year-old female poodle canine, with slight appetite, was referred to a private clinic located in the Metropolitan Region of

the City of Recife-PE. According to the history, the animal was fed with super-premium food and pedigree and had been treated for ticks (15 days) and days later after a routine hygienic grooming, it acutely lost control of the left hind limb. During the clinical examination, left posterior limb paresis and loss of tail movement were found. Thus, a complete blood count was requested with hematology research, which resulted in anemia, thrombocytopenia and the presence of *E. canis morulae*. The animal was also referred for radiographic examination, revealing several findings such as the presence of osteophytes (L2), lipoma between the third and fourth vertebrae, and a reduction in intervertebral spaces. However, none of the findings justified the paresis. The treatment for ehrlichiosis was based on doxycycline (200 mg) 1 comp. 2 x day for 24 days; associated with anti-inflammatory Prednisone - BID, for 15 days, anti-anemic Eritrós - 1 comp./day, Leucogen (H) immunomodulator 5 mL (2 x day) for platelet elevation and a cerebral and peripheral vasodilator Revimax - 1 comp./ day.

Further tests were requested after completion of the treatment, which resulted in mild anemia and absence of *E. canis morulae*, however, the mobility was compromised, the animal was rarely getting up and after a few days, it returned to feeding. In this period, a new clinical sign, hematuria, appears, and a new treatment based on enrofloxacin - ½ comp. every 12 h, for 6 days, Eritrós -1 comp./day for 30 days, and Physiotherapy/hydrotherapy sessions was added until the animal started walking again with difficulties. Due to the clinical situation presented, a treatment with stem cell transplantation was considered, but it was not carried out due to the high probability of death after possible transplant rejection, although a compatibility test was performed and the result was compatible between the donor animal. and its receiver.

After 15 days, the animal again presented a picture of hematuria and an ultrasound examination was requested, which revealed a thick bladder. A new drug treatment was then instituted: Norfloxacin (200 mg) - ½ tablet for 5 days. After finishing the treatment, it was found that the animal still walked with difficulty to the usual places, but it did not present any more paresis, neither hematuria nor anemia. There was a suspicion of Stroke that due to vasculitis, narrowing of the vascular caliber and less blood passing through the vessel may occur, causing the Stroke. That was proven by electrocardiogram examination.

Discussion

The animal in question had been initially analyzed by six different veterinarians who, despite the evidence, did not suspect that all the clinical signs presented were related to ehrlichiosis and judged the case to be of iatrogenic cause.

The posterior paresis is also justified by the non-response of the nerves of the left posterior limb and with it we observed the cauda equina syndrome in the animal where the cauda equina (the end of the spinal cord in the lumbosacral region), constituting the collection of nerve roots that descend through the vertebral canal, through the L6, L7 and sacrum vertebrae.

According to authors Mylonakis et al. and Fonseca, clinical signs of anorexia, depression, severe bleeding tendency, pancytopenia, and hypoalbuminemia could be lethal in dogs with chronic ehrlichiosis [14, 13]. These studies corroborate the conclusions of Bre-

itschwerdt and Stich et al., regarding potentially fatal signs in addition to pancytopenia, of clinical findings that involve organs like splenomegaly, glomerulonephritis, renal failure, interstitial pneumonitis, anterior uveitis, meningitis associated with cerebellar ataxia, in addition to depression, paresis, hyperesthesia, anorexia, and weight loss [11, 12]. The affections of the cauda equina differ from those observed in other regions of the spinal cord due to their unique anatomy, mainly affecting large dogs, and varying degrees of involvement of the pelvic limbs, bladder, anal sphincter, and tail, with clinical symptoms ranging from flaccidity to paralysis of the pelvic limbs. Conservative treatment based on non-steroidal anti-inflammatory drugs, corticosteroids and acupuncture/physiotherapy/ hydrotherapy can be used, being a good prognosis for animals that do not have urinary and fecal dysfunction [15].

However, in the case studied, urinary infections and the need for diapers in the acute phase of the condition still occurred. Which have been treated with enrofloxacin and Norfloxacin. One of the causes of the syrup equine syndrome is discospondylitis (intradiscal osteomyelitis), which may be the result of the presence of fungus or bacteria by skin anesthesia or hematogen via the discs, which is also a possible interpretation for the clinical case observed. This was a rare situation, but it has become frequent in cases of ehrlichiosis in hospitals and veterinary clinics. Fonseca also cites the serious and potentially fatal importance of the tendency to spill blood in these animals [13]. As well as, Nelson and Couto also report the evidence of hemorrhages and paresis, in addition to other changes such as depression, weight loss, hepatomegaly, lymphadenopathy [16].

In the case in question, some alterations are observed, such as neurological signs involving the spinal cord, brainstem and cervical spinal cord and torocolombar and lumbosacral regions; because the animal presented paraplegia, urinary incontinence, and absence of reflexes in the limbs, walking in circles, pedaling movements and loss of proprioception. Hydrotherapy and physiotherapy allowed the animal to recover from cauda equina syndrome, walking again, and recovering proprioception. However, the animal still shows neurological signs of walking in a circle (which is thought to heal with the continuation of physiotherapy) and presents tremors when sleeping.

Conclusion

The perception of the case seems to suggest that the bacterium, by hematogenesis via, reaches the discs, paralyzing the pelvic limbs, bladder, anal sphincter, and tail, causing neurological disorders, and even cause animal's death. Paresis and Stroke, as well as hydrocephalus and meningitis, clinical signs that were previously much more atypical and that at the moment have become much more frequent [17-42].

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