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Pharmacological treatment of aural hematoma in a dog

Tratamiento farmacológico de un hematoma auricular en un perro

Olivares-Muñoz Angélica* [ID], Serrano-Solís Arturo [ID], Medina-Magariño Esther [ID], Pinos-Rodríguez Juan [ID]**

Universidad Veracruzana. Facultad de Medicina Veterinaria y Zootecnia. *Responsible author: Olivares-Muñoz Angelica. **Corresponding author: Pinos-Rodríguez Juan. Av. Miguel Ángel de Quevedo s/n. Colonia Unidad Veracruzana CP. 91710, Veracruz, Veracruz, México. E-mail: aolivares@uv.mx, arserrano@uv.mx, esthermdmg@gmail.com, jpinos@uv.mx

Abstract

Auricular hematoma is defined as an increase in subcutaneous volume, there is usually blood in the auricle secondary to a rupture of the capillaries producing a separation of the auricular cartilage and the skin. It is generally observed unilaterally or bilaterally in patients with a history of otitis or alteration of the coagulation factors. We present the 1clinical case of a 12-year-old domestic dog, Labrador breed, with a history of an increase in volume of the right ear for 8 days. In the general physical examination, serum was observed an increase in the volume of fluid in the auricle. The corresponding blood tests were performed with normal ranges, and the study of hemoparasites was negative. Triamcinolone 0.2 mg/kg was started as a single dose in the affected area after draining approximately 5 mL of bloody fluid. The dog was sent home with serratiopeptidase 1 mg/kg every 24 hours for 10 days. The dog was checked 8, 21 and 90 days after treatment, showing 90% improvement and mild fibrosis in the atrium. No further treatment with corticosteroids was applied. The use of corticosteroids with fibrinolytics is a good treatment option of auricular hematoma.

Keywords: auricular, hematoma, fibrinolytics, treatment, corticosteroids.

Resumen

El hematoma auricular se define como un aumento de volumen subcutáneo, hay sangre en el pabellón auricular secundario por una rotura de los capilares produciendo una separación del cartílago auricular y la piel. Generalmente se observa de forma unilateral o bilateral en pacientes con antecedentes de otitis o alteración en los factores de la coagulación. Se presenta el caso clínico de un perro doméstico de 12 años, raza Labrador, con antecedentes de aumento de volumen del oído derecho desde hace 8 días. En la exploración física general se observó un aumento del volumen de líquido en el pabellón auricular. Se realizaron los estudios sanguíneos correspondientes con rangos normales, el estudio de hemoparásitos fue negativo. Se inició con una dosis única de 0.2 mg/kg de triamcinolona en la zona afectada tras drenar aproximadamente 5 mL de líquido serosanguinolento. El perro fue enviado a casa con serratiopeptidasa 1 mg/kg cada 24 horas durante 10 días. El perro fue revisado a los 8, 21 y 90 días posteriores al tratamiento, con una mejoría del 90% y una fibrosis leve en la aurícula. No se aplicó más tratamiento con corticoides. El uso de corticoides con fibrinolíticos es una buena opción de tratamiento de hematoma auricular.

Palabras clave: auricular, hematoma, fibrinolíticos, tratamiento, corticosteroides.

INTRODUCTION

Auricular hematoma in dogs is common in clinical practice. They are characterized by the presence of serosanguineous fluid inside the auricle, causing a separation of the skin from the adjacent cartilage (Perego *et al*., 2021). The causes of the presence of blood are possibly associated with the arteries and veins within the layers of cartilage that suffer trauma (Macphail, 2016).

The hematoma can cause signs in the dog such as pain due to swelling and inflammation. The cause of the disease is possibly associated with trauma due to a strong headshake that affects the auricle. In chronic form, it can cause fibrosis, contraction and thickening of the cartilage, giving irregularity and deformation of the affected auricle if conservative treatment is applied or not (O'Neill *et al*., 2021).

The treatment consists of finding the adjacent cause of the hematoma to achieve a successful correction. In the event of otitis, the etiology of the disease should be sought and applied simultaneously with the correction of the hematoma (Palagiano *et al*., 2023). For treatment, the formation of “cauliflower ear” must be avoided, which consists of preventing the formation of granulation tissue and poor healing, which results in a bad appearance, discomfort, possible stenosis of the ear canal, as well as being painful for the dog (Rüfenacht *et al*., 2022). Treatments may also include surgery, sutures to keep the wound open, active drainage, and fibrin sealants. Other alternatives such as fluid aspiration in combination with topical and oral glucocorticoids are options depending on the patient (Hall *et al*., 2016). In this study, we present a clinical case of a dog that presented an auricular hematoma, where a pharmacological treatment of a single application of intralesional corticosteroids and the use of fibrinolytics was implemented, avoiding surgery and the administration of subsequent doses of corticosteroids in an elderly patient.

Case Report

Clinical case took place in the Hospital Veterinario de Pequeñas Especies of Facultad de Medicina Veterinaria y Zootecnia of Universidad Veracruzana, localized in eastern Mexico at 19°11’ N and 96°08’ W.

Informed consent was obtained from the owner for the administration of the drugs. Ethics committee approval was not required as this was a non-experimental clinical procedure.

A 12-year-old female Labrador Retriever, 38 kg, body condition score 4/5, clinical history of hip joint pain, no corticosteroid treatment had been administered, only tramadol in previous consultations. As a new discovery, the owner reported a "bulge" in her right ear that had been present for 8 days. She mentioned that she would suddenly shake her head a lot and scratch her ear with her hind leg. She took her to another external colleague and he mentioned performing ear hematoma surgery, but he did not agree and came to our facilities for a second opinion. A physical examination was performed with normal physiological constants. After the clinical examination, the left auricular cartilage was examined, describing it as an increase in the volume of soft tissue of the cartilage, soft,

non-displaceable, not painful to palpation, possibly compatible with an ear hematoma (Figure 1). Otoscopy revealed only erythema over the pinna, but no discharge. Swabs were performed on both ears. A complete blood count, serum biochemistry and IDEXX 4Dx test were performed to detect antibodies for canine anaplasmosis and ehrlichiosis that could cause some alterations in coagulation factors (Table 1).

Table. 1 Complete blood count, serum biochemistry and urine specific gravity

	Value	Reference Interval[1]
Red blood cells, $x10^6$/µL	5.8	3.3 - 7.8
Haemoglobin, g/dL	14.4	14.7-21.2
Haematocrit, %	42.7	37.0 - 55.0
White Blood Cells, $x10^3$/µL	8.8	6.0 - 17.0
Platelets, $x10^3$/µL	251	200 - 500
Blood urea nitrogen, mg/dL	21.8	10 - 24
Creatinine, mg/dL	0.95	0.7 – 1.2
Cholesterol mg /Dl	349.0	129-334
Urine specific gravity	1.050	1.001 – 1.060

[1]Nuñez-Ochoa & Bouda, 2007.

The hematological and blood chemistry findings did not show significant alterations, except for cholesterol, which was slightly outside the normal range. The patient tested negative for the rapid hemoparasite test. The cytology showed epithelial desquamation and the moderate presence of round bacteria compatible with cocci, with no neutrophils or erythrocytes observed (Figure 1). No ultrasound was performed to rule out intralesional septa or coagulation tests because the owner did not agree.

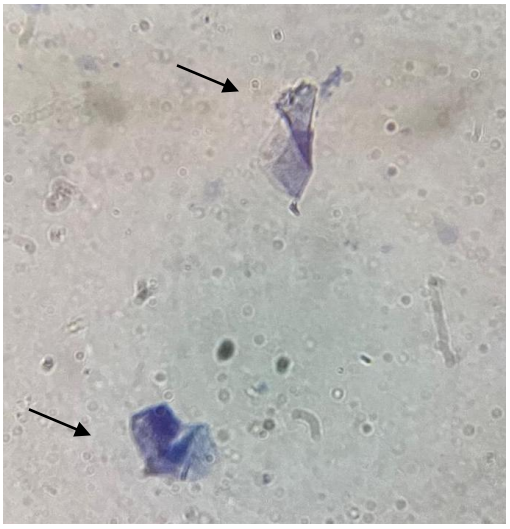

Figure 1. Desquamation in ear cytology

Day 0: treatment with intralesional corticosteroids was started. The patient had previously been fasted from food and liquids for 12 hours. Tiletamine-zolacepam was administered at 3 mg/kg intravenously. The auricle was shaved in its internal and external portions, a 22G catheter was placed to perforate the hematoma, which began to drain and was assisted manually with gauze using dorsal-cranial movements. Approximately 5 mL was extracted. With the same catheter, triamcinolone acetonide 0.2 mg/mg was instilled. The patient recovered from sedation and was sent home with serratiopeptidase 1 mg/kg orally every 24 hours for 10 days. Due to the presence of bacterias, an otic treatment of terbafine, flofenicol and betamethasone acetate was prescribed in both ears, two applications at 8-day intervals.

Day 8: the dog returned for a check-up showed 80% progress, with no recurrence of increased ear volume. Day 21: the patient was called back after completing the fibrinolytic treatment and no longer showing regression of the auricular hematoma. It is proceeding to discharge (Figure 2). The patient returns for a check-up 90 days later without presenting a recurrence. After 14 months, the dog returns to the clinic for joint pain, but no recurrence of auricular hematoma was observed.

Figure 2. Patient's ear after drug treatment. The ear is observed without the presence of auricular hematoma 21 days after finishing the pharmacological treatment.

DISCUSSION

Multiple surgical and non-surgical treatments have been described for auricular hematomas. Poor treatment will result in secondary fibrosis and shrinkage, which can lead to irreparable deformity of the ear or closure of the ear canal. One option is to perform a simple needle aspiration to drain the hematoma, but the hematoma will recur. When this approach is chosen, the concave surface of the auricle should be prepared by shaving

and cleaning it before inserting a large hypodermic needle (16-20 g) into the tip of the auricle, and daily drainage of the hematoma is recommended to prevent early recurrence (MacPhail, 2016). The technique of continuous drainage of fluid from the auricle through a device has also been used, causing local infection in some cases and thickening of the auricle, being an invasive alternative, but with good results (Lahiani & Niebauer, 2020).

In this clinical case, a pharmacological treatment was performed to avoid a surgical procedure in the operating room, which consisted of the application of an intralesional corticosteroid and the use of fibrinolytics.

Some authors such as Hall *et al*. (2016), Rüfenacht *et al*. (2022) had already reported the use of corticosteroids as a treatment in different routes of administration, intralesional and posterior oral. In one study, they exclusively used prednisolone 1 mg per kilogram for 14 days and then 0.5 mg per kilogram for another 14 days, showing an 80% success rate and a 50% reduction in ear thickness. Although they mention that it is an inexpensive treatment, the adverse effects caused by corticosteroids in prolonged periods of administration should not be ruled out (Rüfenacht *et al.,* 2022). In another study, they conducted a survey of the most frequent treatments used for auricular hematoma by veterinarians, and they mention that the most frequently used pharmacological treatment is drainage and placement of corticosteroids in the lesion, but there is recurrence within 7 days in 59%. In this same study, they do not mention the use of proteolytic drugs. Surgery is the treatment for recurrences, but the appearance is not the desired one (Hall *et al.,* 2016).

Other authors use autologous serum as a pharmacological treatment, but 30% presented recurrence 7 days after medical review (Perego *et al.,* 2021).

For this reason, we observed good results when using the combination of an already implemented treatment, which is the use of intralesional corticosteroids, adding the use of fibrinolytics.

Serratiopeptidase is a proteolytic enzyme with multiple therapeutic applications, including anti-inflammatory, analgesic and antagonistic effects on bacterial biofilms; it helps reduce edema and acts as a fibrinolytic. Its anti-inflammatory effects are attributed to the discovery that it has effects on cyclooxygenases I and II, key enzymes in the production of inflammation. It is considered a bacterial metalloprotease drug, acts as a modifier of the virulent phenotype of bacterial biofilms, attacks mature biofilms and synergizes with antibiotics that act on bacterial biofilms. In addition, it helps heal wounds, dilute and drain the fluid in affected areas. Analgesia is attributed to its effects to hydrolyse bradycidin, histamine and serotonin that cause pain (Jadhav *et al.,* 2020). In addition to the above, it helps dissolve blood clots and arteriosclerotic plaques because it breaks down fibrin and dead or damaged tissues, being considered a fibrinolytic drug (Santhosh, 2018). The literature mentions the use of ultrasound prior to the injection of any treatment to identify single or multiple chambers within the auricular cavity. Detecting the presence of fibrous septa and possible connections between them is crucial for draining and treating each

affected part of the aural hematoma cavity. When there is communication between the chambers, it is possible to treat the entire affected area and avoid partial treatments and recurrences. Therefore, ultrasound is essential for detecting chambers that may or may not be connected, thus enabling complete application of the intralesional medication. In this study, a blind technique was used, but the use of ultrasound is strongly recommended for future treatments (Palagiano *et al.*, 2023). In this patient, although all his studies were within normal ranges, the owner did not agree to a surgical procedure for fear of his age and that he might die. In this case, sedation was only used to allow the puncture and drainage, and then intralesional corticosteroid was added and the patient was sent home with serratiopeptidase every 24 hours for ten days. The properties of serratiopeptidase were synergistic with the intralesional corticosteroid, in addition to treating the cause of otitis externa with the use of a triple-drug regimen to attack bacteria and reduce inflammation of the ear canal (Nuttall, 2023). The patient did not show any adverse effects with serratiopeptidase.

CONCLUSION

The combination of medications for the treatment of auricular hematoma was successful in this elderly patient, without resorting to surgery. Although this case showed success, ultrasound guidance was not used to avoid partial intralesional treatments. Therefore, it is suggested that more procedures be performed based on the efficacy of the therapeutic treatment described in this work in conjunction with the diagnostic technique.

CONFLICTS OF INTEREST

All authors declare that they have no conflicts of interest.

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