



RESEARCH ARTICLE

Non-surgical Treatment of Canine Auricular Hematoma with Intralesional and Systemic Corticosteroids: A Pilot Study

Alberto Martin Cordero^{1*}, Cecilia Lopez Marquez¹, Camilo Romero Núñez², Rafael Heredia Cardenas², Galia Sheinberg Waisburd³, Ariadna Flores Ortega⁴

¹VETDERM, Dermatología Veterinaria Especializada, Guadalajara, Jalisco, Mexico

²DERMAVET, Dermatología Veterinaria, Ciudad de Mexico, Mexico

³CVM, Centro Veterinario Mexico, Departamento de dermatología, Ciudad de Mexico, Mexico

⁴Doctorado en Ciencias Agropecuarias y Recursos Naturales. Centro Universitario de la Universidad Autónoma del Estado de Mexico. UAEM, Amecameca, Estado de Mexico. Mexico

Abstract

Background - Auricular hematomas are fluctuating, fluid-filled inflammations of the pinna's concave surface in dogs. This condition occurs as a result of violent head movement or scratches on the ear due to external otitis. Pharmacological and surgical treatments have been used with varying results. The objective of this study was to evaluate the effect of drainage in canine auricular hematoma with local corticosteroid deposition and the systemic administration of Prednisolone.

Methods & Results - Auricular hematoma was drained in ten dogs. Subsequently, they were treated with a single injection of 0.4 ml of Triamcinolone Acetonide¹ (6 mg/ml) into the hematoma cavity, together with oral anti-inflammatory Prednisolone² (1 mg/kg) for 10 days. The length of the hematoma showed no change between the first and second visits, but on the third visit, there was a significant reduction from 6.92 to 1.17 cm. Similarly, the width of the bruise showed no change from the first to the second visit, but there was an easily seen reduction on the last visit.

Discussion - The height of the hematoma was significantly reduced from the first to the second visit, but there were no subsequent changes. The hematoma's amount of fluid decreased with each visit. At the end of the study, patients showed a complete recovery from the hematoma, with no fluid present at the last visit. Drainage of the auricular hematoma with local application of Triamcinolone Acetonide and Prednisolone anti-inflammatory doses for 10 days appears to be an effective non-surgical treatment for canine auricular hematoma.

Key Words - Otohematoma, Canine, Corticosteroids, Triamcinolone

Introduction:

Auricular hematomas are fluctuating inflammations, filled with hemorrhagic fluid that affect the pinna's concave surface in dogs and cats[1,2], commonly occurring as a result of violent shaking of the head or scratching of the ears[3]. The exact location of the bleeding is unknown, but it is believed to originate in the branches of the large ear arteries and veins in the cartilage layers. Although we still do not fully understand the pathogenesis, the causes of auricular hematoma may include traumatic bleeding[4,5]. Autoimmune diseases in which a group of patients tested positive for antinuclear antibodies and immunoglobulin G (IgG) were found deposited at the dermoepidermal junction[6]. Another study found no antinuclear antibody (ANA) titers, although biopsies showed evidence of a hypersensitivity reaction, as well as other immunological factors[1]. An association with allergies, hypersensitivity to skin diseases, Otitis Externa and ear mites have also been proposed and observed[1,6,7].

A study conducted at the University of Cambridge in 159 dogs

reported that current treatments for auditory bruising used by veterinarians included needle drainage and local corticosteroid deposition (43%), surgery (29%), and needle drainage without corticosteroids (16%). Surgical procedures included a linear incision with single sutures (35%), sutures plus stents (24%) or an S-shaped incision with sutures (23%). The most common reason for selecting a treatment was previous success (76%). Recurrent hematoma was treated more frequently with surgery (67%). The cosmetic results with the medical treatment are excellent and the results of the surgical treatment are good[8]. Although several surgical techniques have been described to resolve ear bruising[9]. Non-surgical treatments still remain as an option to treat and resolve bruising. The intralesional use of Triamcinolone Acetonide (40 mg/ml) for hematoma has been reported in humans and is associated with good short-

Correspondence to: Ariadna Flores Ortega, Centro Universitario UAEM-Amecameca, Universidad Autónoma del Estado de México, Amecameca de Juárez Estado de México, México, E-mail: ariadnafloresortega[AT]gmail[DOT]com

Received: Dec 21, 2020; **Accepted:** Dec 22, 2020; **Published:** Dec 24, 2020

term results after application[10], however, this positive effect has not been researched in dogs. Other medical options, such as fibrin sealants, have also been reported[11]. The use of systemic steroids in combination with drainage has also been reported, but the use of intralesional steroids in dogs with hematoma has not been reported. Therefore, the objective of this study was to evaluate the effect of canine aural hematoma drainage with local Triamcinolone Acetonide deposition and systemic administration of Prednisolone.

Materials and Methods:

The study was carried out at the dermatological specialty clinic VETDERM in Guadalajara, Mexico, from June to December 2018. All owners signed an informed consent form before the study.

Animals:

10 indistinct male and female dogs, aged 3 to 11 years of age, with untreated auricular hematoma and no history of topical or systemic corticosteroid administration were included in the study.

Treatment:

Fluid was drained from the hematoma with a 22-gauge needle and a 10 ml syringe. The syringe was separated from the needle without removing it from the hematoma cavity. A single 0.4 ml injection of Triamcinolone Acetonide (6 mg/ml) was administered into the hematoma cavity, and the syringe containing the Triamcinolone solution was attached to the same needle previously used for drainage.

After injecting Triamcinolone, the needle was removed and light compression was applied with the fingers, then a cotton swab was used at the injection site. Patients were sent home with a 1 mg/kg Prednisolone prescription every 24 hours for 10 days.

Hematoma Evaluation:

The evaluations were carried out on days 0, 7 and 14. Auditory bruising was measured using a gauge to establish width, length, and height. The amount of fluid withdrawn from the hematoma cavity was measured in milliliters.

If the hematoma persisted at the second visit, fluid extraction was performed without the administration of a local corticosteroid, no bandage or compression was applied following the procedure.

Statistical Analysis:

The data collected for the hematoma variables (length, width and thickness) and the amount of fluid recovered were analyzed using the Tukey’s range test studied using a 0.05 alpha to compare the values obtained during the three follow-up queries.

Results:

(Table 1) presents patients by breed, age and time of evolution of the auricular hematoma; together with the results of the

statistical comparison of each variable according to the visit. The length of the hematoma was statistically the same during the first two visits, but at visit three the value had decreased significantly from 6.92 to 1.17 cm. Likewise, the width of the hematoma remained statistically the same in visits one and two, with a significant decrease observed in visit three over visit one and two, decreasing to 1.00 cm. On the other hand, the height of the hematoma was different from visit one to visit two and visit three (1.02 cm) was also different from visit one (0.17 cm). The amount of fluid collected from the hematoma was significantly different at each visit, decreasing from 14.78 to 0 ml, indicating hematoma remission. Only one case (the chronic case) required additional fluid drainage at the second visit (Table 2).

Discussion:

Several surgical techniques have been described for ear bruises, most leaving scars, fibrosis, or an undesirable cosmetic appearance[12]. The first of these techniques published was by Kuwahara[6], who described five groups of patients treated for auricular hematoma using different techniques: group 1 was treated surgically; Group 2 was treated with intravenous Dexamethasone 2 mg/kg SID and intramuscular Gentamicin 4 mg/kg; group 3 was treated with hematoma aspiration and 0.5 mg/kg Dexamethasone IV and 4 mg/kg Gentamicin. Group 4 received the same treatment as Group 3 but with additional hematoma drainage, after which the cavity was rinsed repeatedly using 10-50 ml solution containing 0.2-0.4 mg Dexamethasone and 0.25 mg Gentamicin which had been

Table 1: Patients according to breed, sex, age and time of evolution of the auricular haematoma.

Patient	Breed	Sex	Age (years)	Time of evolution (days)
1	Golden retriever	M	5	5
2	Golden retriever	F	7	7
3	English bulldog	M	4	3
4	Boxer	F	5	2
5	Golden retriever	F	3	3
6	Mixed breed	M	11	15
7	Golden retriever	F	4	4
8	Bernese mountain	F	5	3
9	Golden retriever	M	4	5
10	Boxer	M	6	2

Table 2: Mean comparisons of length, width and height and quantity of liquid in dogs with aural haematoma between treatment visits.

	Length (cm)	Width (cm)	Height (cm)	Fluid (ml)
Visit 1	7.85 ^a	4.85 ^a	3.00 ^a	14.78 ^a
Visit 2	6.92 ^a	3.92 ^a	1.02 ^b	3.28 ^{ab}
Visit 3	1.71 ^b	1.00 ^b	0.17 ^b	0 ^b
VC	65.04	75.96	117.93	193.78
SE	0.78	0.54	0.36	2.54

^{ab}Superscript letters on values in the same column indicate significant difference at alpha 0.05.
VC: variation coefficient
SE: standard error

diluted 5-10 times; and Group 5 was treated only with the hematoma cavity's reddening without any other treatment[7]. In the Kuwahara⁶ study, patients in group 4 achieved the highest success rate (66.7%) without scarring, fibrosis, or an undesirable cosmetic result. These findings are similar to those obtained in this study, in which 100% of dogs showed improvement after fluid drainage, administration of a single dose of 0.4 ml of Triamcinolone Acetonide (6 mg/ml) followed by 1 mg/kg. of oral Prednisolone for 10 days. No patient in Group 5, treated only with the washing technique, had a successful outcome. Romatowsky¹³ reported success using a modified Kuwahara⁶ technique, in which the hematoma was drained and 1 mg Triamcinolone was applied followed by oral Prednisone 0.125 mg BID for 7 days and 0.125 mg prednisone SID for 7 days, The number of cases resolved was 29 out of 30[13]. No patient data, frequency or duration of treatment were provided in the letter to the editor, compared to this study.

The intralesional application of steroids has been used in humans with hematoma. A study conducted in Korea to compare the therapeutic efficacy of aspiration plus intralesional steroid injection with aspiration plus pressure dressing for the treatment of hematoma reported that the hematoma resolved within 4 weeks in the 15 patients of the group pressure dressing, but eight of the 15 patients showed perichondrial thickening. All ten dogs in the current study had no abnormalities after treatment with intralesional and systemic steroids. The human study mentions that the duration of treatment was shorter in the steroid injection group than in the pressure dressing group, with 14 (41.2%) of the 34 patients who showed recovery after the first injection, 15 (44.1%) after the second, and the remaining five (14.7%) recovered after the third, without complications. Therefore, these authors concluded that intralesional steroid injection (Triamcinolone 40 mg/ml) is the treatment of choice for hematoma treatment[14]. These findings are consistent with the results of our study, with the difference that in dogs in this study, only one intralesional injection was given.

Other non-surgical alternatives have been used to treat bruising in dogs, such as the use of fibrin sealants. Blattler et al.¹¹ reported the case of a 14-year-old golden retriever with a unilateral-left hematoma treated with bandages and drainage, but a poor result was observed with the application of human fibrin sealants (HFS, 3.0 ml; Berialplast P Combi Set, Nycomed AG). This treatment has been successful in humans[15], but its use has not been reported in dogs. These authors reported that the hematoma came back shortly after treatment, and the dog was subsequently treated with conventional surgery. In the present study, none of the ten treated dogs required conventional surgery[16]. Auricular hematoma is commonly treated using surgical techniques, which can cause scarring and pinna fibrosis. Surgery is a more expensive treatment with anesthetic considerations, for which other alternative techniques have been described[17].

Conclusion:

The technique and treatment described in this study achieved a successful outcome in all patients without causing damage

to the auricular cartilage or any adverse clinical result. A single administration of Triamcinolone Acetonide (6 mg/ml) and a daily prescription of oral Prednisolone (1 mg/kg) for 10 days facilitated patient management and client compliance. This technique offers an effective, inexpensive, and non-surgical treatment for canine auricular hematoma. However, further studies with larger groups are required to establish optimal dosage according to patient size or hematoma, as well as the effectiveness of different combinations of systemic corticosteroids.

Declaration of interest

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of paper.

References

1. Joyce JA, Day MJ (1997) Immunopathogenesis of canine aural haematoma. *Journal Small Animal Practice* 38(4): 152–158. [\[View Article\]](#)
2. Fossum TW (2007) Surgery of the ear. In: *Small Animal Surgery*. 3rd ed. Ed T. W. Fossum. Mosby, London, UK: 289–316.
3. MacPhail C (2016) Current treatment options for auricular hematomas. *Veterinary Clinic North America Small Animal Practice* 46(4): 635–641. [\[View Article\]](#)
4. Dubielzig RR, Wilson JW, Seireg AA (1984) Pathogenesis of canine aural hematomas. *Journal American Veterinary Medical Association* 185(8): 873–875. [\[View Article\]](#)
5. Cechner P.E (1998) Suture technique for repair of aural hematoma. In: *Current techniques in small animal surgery*. Teton newmedia 4th ed. Williams & Wilkins, Baltimore. 95–98.
6. Kuwahara J (1986) Canine and feline aural hematoma: clinical, experimental, and clinicopathologic observations. *American Journal Veterinary Research* 47(10): 2300–2308. [\[View Article\]](#)
7. Wilson JW (1983) Treatment of auricular hematoma, using a teat tube. *Journal American Veterinary Medical Association* 182(10): 1081–1083. [\[View Article\]](#)
8. Hall J, Weir S, Ladlow J (2016) Treatment of canine aural haematoma by UK veterinarians. *Journal Small Animal Practice* 57(7): 360–364. [\[View Article\]](#)
9. Gyroffy A, Szijarto A (2014) A new operative technique for aural haematoma in dogs: a retrospective clinical study. *Acta Veterinaria Hungarica* 62(3): 340–347. [\[View Article\]](#)
10. Lee SY, Han SA, Park MH, et al. (2019) Clinical implications of intralesional steroid injections in the management of otohematoma. *Laryngoscope* 129(2): 459–465. [\[View Article\]](#)
11. Bojrab MJ, Constantinescu GM (1998) Sutureless technique for repair of aural haematoma. In: *Current Techniques in Small Animal Surgery*. Teton newmedia 4th ed. Ed Williams and Wilkins, London; UK: 97–98.
12. Henderson RA, Horne RD (2003) The pinna. In: *Textbook of Small Animal Surgery*. 3rd ed. Ed. Slatter. B. Saunders, London, UK: 173-174.
13. Blattler U, Harlin O, Mattison RG (2007) Fibrin sealant as a treatment for canine aural haematoma: a case history. *The Veterinary Journal* 173(3): 697–700. [\[View Article\]](#)

14. Brown C (2010) Surgical management of canine aural hematoma. *Lab Animal* 39(4): 104–105. [[View Article](#)]
15. Romatowski J (1994) Non-surgical treatment of aural hematomas. *Journal American Veterinary Medical Association* 204(9): 1318–1318. [[View Article](#)]
16. Im GJ, Chae SW, Choi J, et al. (2008) Intralesional steroid injection for the management of otohematoma. *Otolaryngology-Head and Neck Surgery* 139(1): 115–119. [[View Article](#)]
17. Yamasoba T, Tayama N, Kitamura K (1990) Auricular hematoma. *Nippon Jibiinkoka Gakkai Kaiho* 93: 2028–2037. [[View Article](#)]

Citation: Cordero AM, Marquez CL, Núñez CR, Cardenas RH, Waisburd GS, et al. (2020) Non-surgical Treatment of Canine Auricular Hematoma with Intralesional and Systemic Corticosteroids: A Pilot Study. *Vet Sci Med* 3(1): 001-004.

Copyright: © 2020 Cordero AM, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.