

**Oral eosinophilic granuloma in one Cavalier King Charles Spaniel**

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## **Introduction**

Canine eosinophilic granuloma (CEG) is a rare disease that occurs in dogs. This skin disease usually presents in the oral cavity as papules, nodules, or plaques located on the palate or tonsils, however, case reports have documented CEG lesions in other cutaneous sites such as the nasal planum, ventral abdomen, thorax, metatarsus, prepuce, flank, digit, eyelid, external ear canal, and cheek region.<sup>4</sup> Lesions in the oral cavity may or may not be painful and the most common sign owners report in their pet is halitosis. CEG is verified based on histologic diagnosis.

Histopathological findings in cases of CEG include granulomatous inflammation surrounding areas of degenerative collagen, but the essential finding is a predominance of eosinophils.<sup>2</sup> While the exact cause is unknown, the proposed pathogenesis of CEG is a hypersensitivity reaction to infectious agents, environmental allergies or food allergies.<sup>6</sup> Since case reports of CEG frequently involve Siberian Huskies and Cavalier King Charles Spaniel dogs, there is reason to believe that there is a genetic involvement in these breeds. An immunosuppressive dose of corticosteroids at a tapering dose is commonly successful at resolving the lesions, however, antibiotics and chemotherapy drugs have been used in reoccurring lesions.<sup>6</sup> In patients with recurring CEG, determining the allergen that provoked the immune response is fundamental in preventing future lesions from developing. The purpose of this case report is to describe the management of one case of CEG in a Cavalier King Charles Spaniel using oral corticosteroids and a food allergy trial.

## **History/Presentation**

A 1-year-old intact male Cavalier King Charles Spaniel, Sven, presented to Mississippi State University College of Veterinary Medicine, Community Veterinary Service on July 26, 2017 for a 5-day history of lower jaw chattering. Prior to presentation, Sven's owner reported giving him

a piece of chicken that was too hot which he spit out immediately. Sven lives mostly indoors and his owner reported that he only goes outside to urinate, defecate, or go for a leashed walk. He was free fed Hill's Ideal Balance dry food and the owner reported that his appetite had decreased over the last couple of days. Sven had a history of being hit by a car on June 5, 2017 that resulted in a concussion and fractured canine tooth. His owner reported that no further complications resulted from the incident. The only medication that he was on at the time was monthly Trifexis for flea and heartworm prevention.

Upon presentation, Sven was bright, alert, and responsive. He weighed 9.2 kg with an ideal body condition score of 5/9. His vital parameters of temperature, pulse, and respiration were within normal limits. His heart and lungs auscultated normally. On oral examination, two smooth dime sized circular lesions located side by side were present in the caudal portion of the palate. The lesions were ulcerated and surrounded by reddened raised nodules. The pharynx was hyperemic and inflamed and the nodules coalesced from the primary lesions to the back of the throat. The rest of the physical exam was within normal limits.

Based on the history and presentation of the lesions, Sven was diagnosed with oral ulcers due to a burn. Sven was prescribed a 30mL bottle of mouth rinse with instructions to rinse the mouth with 1.5mL every 6-8 hours and 75mg chew tab of carprofen with instructions to administer 0.5 tabs orally every 24 hours for 4 days. Sven was sent home with samples of Hill's Healthy Advantage Chicken and Vegetable entrée and the owner was instructed to note any change in the oral lesions or mouth pain. A recheck was recommended in 7 days (August 2, 2017) to reassess the oral lesions.

## **Diagnostic Approach**

On recheck examination, the ulcers in the caudal portion of the palate were unchanged from the previous visit. At this time, it was recommended that a punch biopsy of the lesions be performed to diagnose the lesions. Prior to anesthesia a “Big 4” bloodwork panel was run on Sven. The results were as follows: Pack Cell Volume = 45%, Total Solids = 7.0 g/dl, Glucose = 105 mg/dL, Blood Urea Nitrogen = 15-26 mg/dL. Sven was anesthetized and two 4mm punch biopsies of the large circular lesion on the right side of the caudal portion of the palate were obtained. The tissue was closed with a simple interrupted pattern using absorbable suture. While under anesthesia Sven underwent a dental prophylaxis with no extractions or complications. Biopsy results reported that the lesions in the mouth contained a heavy predominance of eosinophils and diagnosed the lesions to be a variation of oral eosinophilic granuloma.

## **Pathophysiology**

The pathogenesis of CEG is presumed to occur following a Type 1 Hypersensitivity immune-mediated reaction.<sup>1</sup> When in the face of an environmental or food allergen, eosinophils are involved in the inflammatory response to the foreign material and respond to the antigens inappropriately producing a hypersensitive reaction. Once an eosinophil is activated the cells phagocytize foreign material or degranulate, as well as synthesize cytokines that are involved in the inflammatory response.<sup>1</sup> This cascade of eosinophilic degranulation and production of inflammatory cytokines results in a profound tissue reaction.

A genetic component to CEG is also suspected to occur in Siberian Husky and Cavalier King Charles Spaniel dog breeds. The disease was first described in 1980 occurring in adolescent Siberian Huskies of the same familial line across generations.<sup>5</sup> Since then, numerous case reports

have involved Cavalier King Charles Spaniel breeds suggesting a genetic involvement.<sup>2</sup> Further research warrants whether these breeds are genetically predisposed to CEG.

### **Treatment and Management**

CEG is commonly treated with an immunosuppressive dose of corticosteroids at a 2.0mg/kg daily dose and tapering the dose over a 3 to 4-month period. While corticosteroid therapy is effective at resolving lesions, there have been reports of lesions reoccurring once the corticosteroid therapy has stopped. In reoccurring cases a low dose every other day regimen of corticosteroid therapy may be necessary for life.<sup>3,4,6</sup> In patients' that cannot tolerate corticosteroids, reports suggest additional immunosuppressive medications can effectively treat the disease while lowering the corticosteroid dose. Treatments of chlorambucil and oral azathioprine have been combined with corticosteroids in refractory cases.<sup>4</sup> Electrochemotherapy with bleomycin has been used in treating large oral lesions that did not respond to corticosteroid therapy with complete resolution six weeks after treatment.<sup>6</sup>

CEG occurs due to a hypersensitivity reaction and thus it is crucial to investigate the underlying cause while treating the lesions medically. Intradermal tests and food trials are recommended and removal of the suspected allergen from the patients' diet and/or environment is imperative in the treatment protocol.

### **Case Outcome**

Steroid therapy and food trial was the treatment protocol for this case. Sven was started on 2.0mg/kg of prednisone receiving one 20mg tablet once daily for 30 days, 10mg capsule of omeprazole twice daily for 30 days, and a 12-week food trial of Hill's Prescription Diet d/d and Hypo Treats. At his recheck appointment on September 6, 2017, the two eosinophilic

granulomas in the mouth had partially resolved with only two areas of erythema present where the ulcers were located. At this visit, the prednisone dose was tapered to 0.75 tablet once daily for 3 weeks while continuing the omeprazole dose and feeding trial. On September 27, 2017, the only evidence of the ulcers was two small discolorations in the caudal portion of the soft palate. At this visit, the prednisone dose was tapered to 0.5 tablet once daily for 3 weeks while continuing the omeprazole dose and feeding trial. On October 18, 2017, (10 weeks after treatment) the lesions were completely resolved. At this time, the prednisone dose was tapered to 0.25 tablet every other day for three weeks while continuing the omeprazole and feeding trial. On November 8, 2017 (13 weeks after treatment began) the lesions remained resolved and the medications were discontinued with instructions to remain on the Hill's Prescription Diet d/d diet and Hypo Treats with no other foods allowed in the diet.

On March 28, 2018 (20 weeks after medications were discontinued), Sven returned to the clinic after the owner noticed the two dime sized circular lesions returning in the back of his mouth. The owner reported that Sven was staying with relatives the previous week where he received small amounts of human food and an unknown amount of Pup-Peroni treats. The owner reported that Sven's appetite and water consumption had been normal and there were no obvious signs of discomfort or jaw chattering. The owner reported that other than the visit with relatives, Sven was still eating 2 cups of Hill's Prescription Diet d/d Salmon and Potato as maintenance diet and only received Hypo Treats. On physical exam, there were two circular, reddened lesions just off midline of the caudal soft palate. The lesions were not severely ulcerated and did not have clear lines of demarcation. Sven was diagnosed with recurring CEG lesions and prescribed prednisone with instructions to receive 0.5 of a 20 mg tablet orally every 24 hours for 14 days (1.0mg/kg dose) along with 15mg of omeprazole every 24 hours for gastric acid inhibition. At the two

weeks recheck appointment on April 10, 2018, the lesions in the mouth appeared more reddened and a clearly defined line of ulceration was identified. In addition to the two original lesions, there was an oval shaped ulcerated lesion on the soft palate just central and cranial to the previous lesions. At this time the prednisone dose was increased to 0.5 of a 20 mg tablet orally every 12 hours to achieve an immunosuppressive dose of 2.0 mg/kg.

The underlying cause of the recurrence of CEG in this case could be associated to a break in dietary restrictions experienced a week prior or a response to recent seasonal/environmental changes brought on by Spring, or a combination of factors. The current treatment plan for this recurring case is to resolve the lesions with a tapering dose of corticosteroids until complete resolution and closely monitor for reoccurrence while Sven remains on strict dietary management. It was discussed with the owner that remaining on the strict food trial is crucial to the treatment plan. If the lesions return after discontinuation of the corticosteroid or they are unable to resolve an immunosuppressive agent Atopica (cyclosporine) will be added to the treatment plan. Sven is expected to return for a two week recheck on May 4, 2018.

## References

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