Olgu sunumu
Case report

Melez Irk Bir Köpekte Şüpheli Köpek Distemper Virüsü ve Mine Hipoplazisi ile Eş Zamanlı Kraniomandibular Osteopati

Concurrent Craniomandibular Osteopathy with Suspected Canine Distemper Virus and Enamel Hypoplasia in a Mixed Breed Dog

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ÖZ

Bu olgu sunumunda, bilateral mandibular şişkinlik, anoreksi ve genel sağlık durumunda düşüş görülen 6 aylık dişi aşısız melez bir köpeğin klinik sunumu anlatılmaktadır. Köpekte ayrıca antebrachium ve mandibulanın distal ön yüzeyinde sert şişlik ile birlikte salivasyon artışı ve çene hareketlerinde ağrı görüldü. Ek olarak, mine hipoplazisi tespit edildi ve bu da Canine Distemper Virüs enfeksiyonundan (CDV) şüphelenilmesine yol açtı. Klinik, radyolojik ve bilgisayarlı tomografi (BT) bulguları kullanılarak yapılan incelemelerde Kraniyomandibular Osteopati (CMO) tanısı konuldu. Bu vaka raporunda, klinik ve görüntüleme bulguları aracılığıyla, 6 aylık aşılanmamış melez bir köpekte şüpheli CDV enfeksiyonu, mine hipoplazisi ve CMO'nun birlikte ortaya çıkışını vurgulamaktadır.

ABSTRACT

This case report describes the clinical presentation of a 6-month-old female unvaccinated mixed-breed dog with bilaterally mandibular swelling, anorexia, and a decline in general health. The dog also exhibited firm swelling at the distal anterior surface of the antebrachium and mandible, along with increased salivation and painful mouth movements. Additionally, enamel hypoplasia was diagnosed, leading to a suspected Canine Distemper Virus infection (CDV). Further examination using clinical, radiological, and computerized tomography (CT) findings revealed a diagnosis of Craniomandibular Osteopathy (CMO). Through clinical and imaging findings, this report highlights the co-occurrence of suspected CDV infection, enamel hypoplasia, and CMO in a 6-month-old mixed-breed unvaccinated dog.

INTRODUCTION

Craniomandibular osteopathy (CMO), a rare disease in young dogs, is defined as a bilateral, irregular, disease that usually affects multiple bones and can potentially extend to the metaphysis of the long bones.[1] It is also referred to as craniomandibular osteodystrophy, mandibular periostitis, lion's jaw, Westie's jaw, and Scotty's jaw. CMO is a non-neoplastic proliferative bone disease mainly affecting the skull bones in dogs.[2] It has been reported that CMO-related radiographic changes are usually seen in the mandible and skull bones and these changes are usually bilateral and symmetrical.[3,4] The canine distemper virus infection has been reported as a risk factor for craniomandibular osteopathy.[5]

CASE DESCRIPTION

In this case report, a 6-month-old mixed-breed female unvaccinated dog which was brought to the Aydın Adnan Menderes University Veterinary Faculty Department of Surgery Clinics was described. The patient's clinical findings included loss of appetite, weakness, increased salivation swelling, and stiffness in the lower jaw. In history, we were informed that she had previously received treatment at a private veterinary clinic for three days. According to an anamnesis taken from the owner, the dog had not been vaccinated. It is not clear when the other puppies born in the same litter as the case dog died. It was declared that the dog had received intravenous fluid therapy and 20 mg/kg ceftriaxone (Noose, Sanofi) for three days to improve its general malaise.

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The dog was stated to have gotten better during the first two days, but was brought to the faculty clinics due to getting worse on the third day. Limitation of jaw movements, loss of appetite, increased salivation, and general malaise (through 7-10 days) were in the anamnesis. Rectal temperature of 38.1°C, respiratory rate of 30/min, and heart rhythm of 80/min were recorded. The mucosal membranes were healthy and the degree of dehydration was between 2-4%. The capillary refill time was 1.5 seconds, and the mandibular lymph nodes were bilaterally enlarged. Additionally, bilaterally, firm swelling on the aboral corpus mandible (Figure 1A) and at the distal anterior surface of the antebrachium (Figure 1B) was observed together with an increase in salivation. During the oral examination, pain when attempting to open the mouth, halitosis, and bronze to brown discolorations on teeth were noted. Abrasions on the enamel layer of teeth were also recorded (Figure 1C).

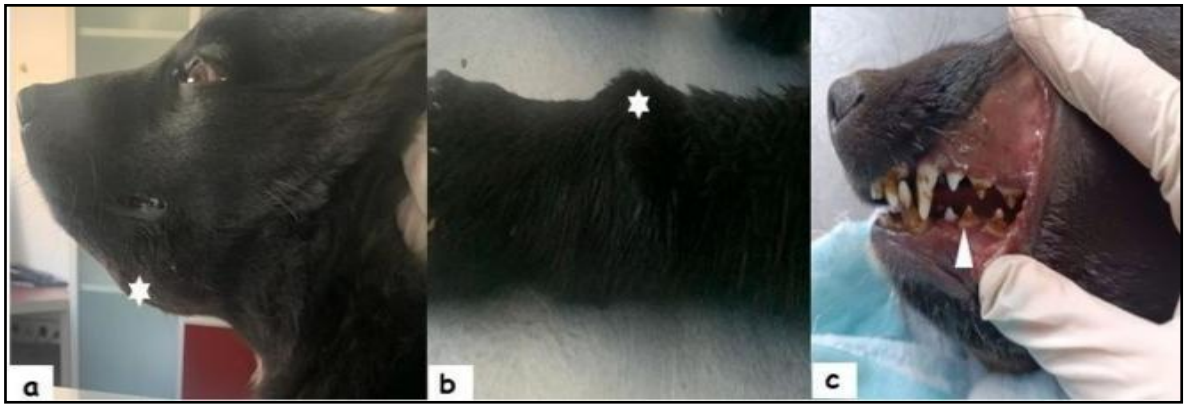

Figure 1. Clinical appearance of the case. **a.** In the patient's lateral side view, the swelling on the mandible is visible (**white star**). **b.** Swelling on distal antebrachium (**white star**). **c.** Color changes of teeth, enamel hypoplasia, and irregular brown color changes (**white arrow**).

As a diagnostic approach, blood works tests were performed on the patient. Radiographic examination of the antebrachium and the jaw was conducted. An irregular periosteal reaction was detected on the distal medial surface of the bilateral radius and ulna. Although bone punch biopsy, rapid test kits and quantitative PCR were recommended for possible distemper virus analysis, these tests were refused by the owner. A computed tomography was taken to better evaluate the irregular bone formations and their placement. Biochemical and blood analyses revealed that all parameters were within normal physiological limits. Radiographs were taken for swellings in the mandible lateral (LL), ventrodorsally (VD), and antebrachium mediolateral (ML), craniocaudal. X-rays taken in two different positions showed irregular bone proliferations in the mandible. Deterioration in bone contour was notable on the distal part of the corpus and ramus mandible. Irregular periosteal reactions were noticed on the anterior surface of the distal part of the radius. Thickening on the dorsal part of the parietal bone and bone proliferation (opacity) were notable in the tympanic bullae (Figure 2A and B).

After the radiographic obtained, a computed tomography (CT) scan was decided. The dog was anesthetized for the CT scan using 2 mg/kg Xylazine hydrochloride (Xylazine Bio® 2%, Bioveta) and 12.5 mg/kg Ketamine hydrochloride (Ketasol®, Interhas). Following induction, the patient underwent intubation, which was maintained during CT scans to provide respiratory support and ensure optimal imaging conditions. The CT findings revealed irregular bone proliferations on the lateral and ventral outer surfaces of the tympanic bullae, less severe on the medial surface (Figure 3A and 3B). The soft tissue surrounding the tympanic bullae shows mineral density, and no abnormality was observed in the temporomandibular joint (Figures 3C and 3D).

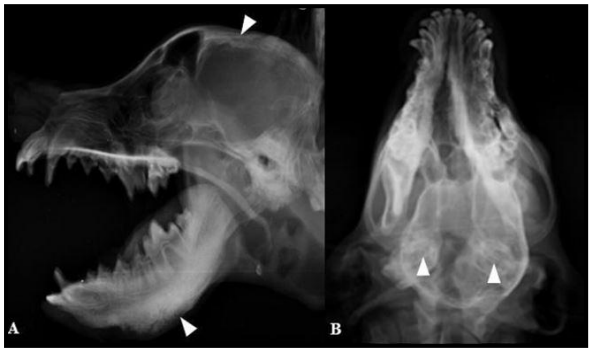

Figure 2: Skull radiographic images of the case. Irregular bone (**white arrowhead**) lateral (LL) and ventrodorsal (VD) radiographs (**A**, **B**) of the case are presented.

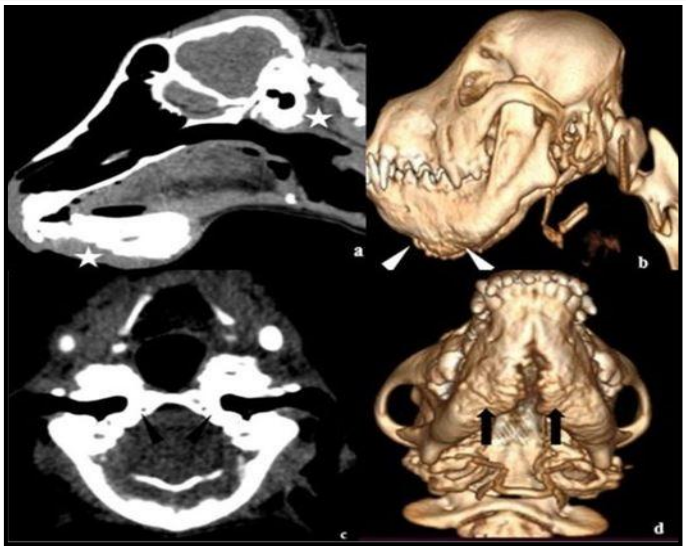

Figure 3: Skull computerized tomography (CT) images of the case. Irregular bone sagittal (**a,b**) and transverse plane CT images (**c,d**) of the case are presented. Bone proliferation on the tympanic bullae primarily involves the outer surface's lateral and ventral aspects (**white asterisk**, **black arrowhead**), with lesser involvement of the medial aspect (**a,c**). Notably, irregular bone proliferation (**black arrow**, **white arrowhead**) is observed at the periphery of the bullae and in the mandible (**b,d**).

Thickening and hyperostosis were confirmed in the dorsal part of the parietal bone. Differential diagnoses include another congenital growth deformity, growth hormone deficiency, hypothyroidism, lysosomal storage disease, and neoplasia. No abnormalities were detected in hormone tests. Urinalysis and multiple radiographs are used to further evaluate the patient and confirm the diagnosis. Although the hospitalization of the dog was proposed, it was refused by the owner. It was reported that the patient died three days after the medical treatment started.

DISCUSSION

CMO, typically reported in pure breeds, may also manifest in cross-breeds, as evidenced by the case presented herein. This particular case underwent its initial examination in our clinics, representing an uncommon occurrence of CMO. Despite prior reports documenting positive responses to treatment in CMO, our case exhibited no favorable response to treatment.[2] The patient did not respond to three days of supportive medical intervention and subsequently succumbed to the disease. In literature, it has been reported that some cases treated with painkillers and cortisone in the treatment of CMO recovered.[1,6] Analgesia management is mainly based on non-steroidal anti-inflammatory drugs. We used painkillers in the treatment of our case, but we could not save the patient. Although in literature, there exist cases when usage of painkillers and cortisone in the treatment of CMO resulted in recovery[1,6], our patient could not be saved despite following such a procedure.

The bony abnormalities may affect not only the mandible but also other bones commonly involved including long bones and those of the skull; namely, the parietal and occipital bones, the tympanic bulla and the mandibular rami, the temporomandibular joint and may cause disruption in the functions of these region. Radiographs and CT have been reported to evaluate the bony proliferation and involvement.[3,4] In our case, we visualized the areas suspected of bone proliferation by radiography and computed tomography. The fact that the disease primarily/mostly affects the skull bones may cause a delay in diagnosis. Therefore, immune system and bone metabolism disorders (Ca/P balance, hormonal control) should be considered and investigated in suspected cases. In the presented case, it may be thought that CMO simultaneous with suspected CDV may be associated with the onset of this disease and that it is important to consider prophylactic treatment (vaccination) in this regard. Especially in puppies, bone diseases can occur due to an imbalance in calcium phosphorus metabolism. In our case, we diagnosed the disease using clinical examination, blood examination, radiography, and tomography due to the financial inadequacies of the patient's owner. When tests for differential diagnosis are not available, pain management should be the mainstay. Hence, analgesic and non-steroid applications should be performed. In cases where oral feeding is not available, the animal should be provided with fluid therapy and feeding tube placement. Serologic tests for distemper could not be performed because the patient's owner did not allow them. Patients diagnosed with CMO should be hospitalized for general condition and disease monitoring. The fact that the owner of this

case did not accept the hospitalization of the patient due to emotional reasons and we could not follow up the patient can be considered as a missing aspect of our case report.

Recommended treatment protocols for CMO in literature include pain management and palliative care.[6] In the presented case, NSAID was administered at the dose (0.2 mg/kg Meloxicam®, Bavet Meloxicam, Tuzla/Istanbul for pain management. Despite the normal leukocyte value observed in the blood examination, prophylactic antibiotics were administered to guard against potential secondary infections (20mg/kg Ceftriaxone Novosef, Sanofi, Şişli/İstanbul). Fluid therapy such as balanced hypotonic crystalloid fluid 100 ml/per 24-hour period intravenously), was administered to the patient's needs. The patient was given liquid food (per day, 15 ml, Viyo Recuperation Dog, Yeniçağ Veterinary Pharmaceutical Ware house, Bornova/İzmir) by syringe by his caregiver. CMO, typically reported in pure breeds, may also manifest in cross-breeds, as evidenced by the case presented herein. This particular case underwent its initial examination in our clinics, representing an uncommon occurrence of CMO. Despite prior reports documenting positive responses to treatment in CMO[2], our case exhibited no favourable response to treatment. The patient, unfortunately, did not respond to three days of supportive medical intervention and subsequently succumbed. Differential diagnoses for the presented case include other congenital growth deformities, growth hormone deficiency, hypothyroidism, lysosomal storage disease, and neoplasia. To comprehensively evaluate the patient, a diagnostic workup involving a blood count, chemistry profile, urine analysis, and multiple radiographs encompassing the skull and various long bones is recommended. Advanced imaging of the skull may further enhance diagnostic precision.

Differential diagnoses for the patient encompass alternative congenital growth deformities, growth hormone deficiency, hypothyroidism, lysosomal storage disease, and neoplasia. Diagnostic methods such as urine analysis, PCR analysis, and magnetic resonance imaging (MRI) are used to confirm the diagnosis. Advanced imaging, such as MRI, of the skull may also be recommended for a more thorough evaluation. The disease may affect not only the mandible but also other bone tissues and may cause disruptions in the functions of this region. The fact that the disease primarily/mostly affects the skull bones may cause a delay in diagnosis. It may be speculated that perhaps the disease has reached its terminal stage when symptoms appear in the long bones. Therefore, immune system and bone metabolism disorders (Ca/P balance, hormonal control) should be considered and investigated in suspected cases. In the presented case, it may be thought that CMO simultaneous with suspected CDV may be associated with the onset of this disease and that it is important to consider prophylactic treatment (vaccination) in this regard. In our case, we diagnosed the disease using clinical examination, blood examination, radiography, and tomography due to the emotional state of the patient's owner. Unlike other CMO cases reported in literature, in our case, suspected canine distemper virus and enamel hypoplasia were observed together with CMO. Although CMO cases are mostly reported in pure-breed dogs, the dog in our case was mixed. Patients diagnosed with CMO should be hospitalized for general condition and disease monitoring. The fact that this case was not hospitalized can be considered as an incomplete aspect of our case report.

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