Canine masticatory myositis in a Rottweiler breed dog

Rottweiler ırkı bir köpekte kanin mastikatör kas miyozitisi

Case Report

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ABSTRACT

Canine masticatory muscle myositis is an autoimmune disease in which the reasons are unclear. This muscle myositis generally seen in large dog breeds. General symptoms are pain and atrophy in the chewing muscle group, difficulty in opening the jaw and weight loss. This case was 2 years old, castrated male, Rottweiler breed dog which was brought to the Istanbul University-Cerrahpaşa Faculty of Veterinary Science Hospital with the complaints of face swelling and difficulty in chewing for 2 weeks. Complete blood count and serum biochemistry was carried out and eosinophilia was determined. Computed tomography was used to detect structural changes in masticatory muscles and masticatory muscle myositis was diagnosed. Cortisone treatment and laser therapy were carried out together with classical treatment to reduce the pain. In the following days, due to dysphagia and anorexia, euthanasia was decided.

Keywords: Canine, Computed tomography, Masticatory, Myositis

ÖZET

Kanin mastikatör kas miyozitisi otoimmun bir hastalık olup nedeni tam olarak belli değildir. Bu hastalık genellikle büyük köpek ırklarında görülmektedir. Genel semptom olarak ağrı ve çiğneme kası grubunda atrofi, çenenin açılmasında zorluk ve kilo kaybı gözükür. Bizim olgumuzu İstanbul Üniversitesi Cerrahpaşa Veteriner Fakültesi Hayvan Hastanesi'ne yüzünde şişlik ve çiğnemede 2 haftadır zorluk şikâyeti bulunan 2 yaşında kısırlaştırılmış rottweiler ırkı bir köpek oluşturdu. Tam kan sayımı ve serum biyokimyası yapıldı ve eozinofili tespit edildi. Mastikatör kastaki yapısal değişiklikleri tespit edebilmek ve tanıyı koyabilmek amacıyla bilgisayarlı tomografi kullanıldı. Zaman kaybetmeden kortizon terapisine başlanıldı ve ağrıyı azaltmak için klasik tedavinin yanına lazer terapisi eklenildi. İlerleyen günlerde besleme zorluğu ve buna bağlı kilo kaybı oluştuğu için ötenazi önerildi.

Anahtar Kelimeler: Köpek, Bilgisayarlı tomografi, Mastikatör, Miyozitis

INTRODUCTION

Muscle myositis is an autoimmune disease that causes focal inflammatory myopathy and causes the clinical limitation of the chewing muscle group containing the temporalis, masseter, pyterigoideus and rostral digastricus muscles, innervated by the mandibular arm of the trigeminal nerve (Melmed et al., 2004). Masticatory muscle myositis (MMM) appears to be a dog specific disease (Shelton, 2007). Canine masticatory myositis causes progressive destruction of type 2M muscle fibers by making focal myositis (Bolfa et al., 2011).

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Article info
Submission: 19-12-2018
Accepted: 15-05-2019
Online published: 08-08-2019
published: 31-08-2019

How to cite this article
Karan, B., Karabağlı, M., and Özer, K. (2019). Canine masticatory myositis in a Rottweiler breed dog. *J Adv VetBio Sci Tech.* 4(2): 67-71. http://doi.org/10.31797/vetbio.499518

e-ISSN: 2548-1150
website: http://dergipark.gov.tr/vetbio
doiprefix:10.31797/vetbio.

The etiology of this disease is unknown, but it is thought that myositis may originate from antibodies produced in response to an infectious agent that cross-reacts with endogenous antigens. Others have suggested that early myofibril damage in dogs with masticator myositis is initiated by cytotoxic CD8 + T cells and subsequently leads to antibody production against muscle fiber proteins (Reiter et al., 2007). The most common clinical symptoms of this disease include difficulty in opening the jaw, pain in the jaw and masticatory muscle (Evans et al., 2004). Computed tomography provides excellent sensitivity in examining the characteristics of the bones and soft tissues of the head region (Reiter et al., 2007). The aim for this study was to point out the usefulness and success of computed tomography imaging especially in the changes in masticatory muscle groups in canine masticatory myositis.

Case presentation

Two years old, male, Rottweiler dog was brought to our hospital with a complaint of swelling in both sides of her face according the owner's information; that the bulge had started 2 weeks ago with an excessive amount of saliva in the mouth and that non-steroidal anti-inflammatory drug (meloxicam) and antibiotic (marbofloxacin) were prescribed in a private clinic. Bilateral swelling was detected in the region corresponding to the masseter muscles on the lateral side of the mandible and more prominently on the left side. Inaddition, the presence of episcleral congestion and exophthalmos was detected (Fig 1).

Figure 1: Appearance of the dog's head region and eye in the first clinical examination.
Şekil 1: Köpeğin ilk klinik muayenesinde baş bölgesinin ve gözünün görünümü.

The patient was anaesthetized with propofol due to its aggressive disposition and a clinical examination was performed. Clinical examination revealed no atrophy of the temporalis muscles but very stiff swelling of the masseter muscles was observed. No fluid content in saliva, abscess, cyst, hematoma or collection character was observed after puncture. The swelling on the left side was much larger than the right side. At this stage, the patient's mouth was opened to examine the teeth, gums and other structures in the mouth, but the mouth could only be opened to allow the tongue to come out. The distance between the mandibular and maxillary 1st incisive teeth was 3 cm. It was not possible to examine the patient's mouth.

Imagining Finding

Lateral and ventrodorsal radiographs of the patients head region were obtained but no radiographic findings were detected. The computed tomography examination of the skull was decided. Sections were taken at 2 mm intervals with SHIMADZU sct-7800 tc model computed tomography. 3D modeling of the computed tomography images was performed and the bone roof, fracture, luxation and degenerative findings were examined but no abnormality was found (Fig 2).

Figure 2: Left lateral (a), ventrodorsal (b), right lateral (c) and dorsoventral (d) images of the cranium after 3D modeling. Mandibular body (CM), Masseteric Fossa (MF), Zygomatic Arch (AZ), Condylar Process (white asterix), Coronoid Process (white arrow).
Şekil 2: 3D modellemeden sonra sol lateral (a), ventrodorsal (b), sağ lateral (c), dorsoventral görüntüler (d). Mandibular Gövde (CM), Masseterik Fossa (MF), Zigomatik Ark (AZ), Kondiler Çıkıntı (beyaz asterisk), Koronoid Çıkıntı (beyaz ok).

When axial sections were examined, hypoatenuated areas were detected in masseter, temporalis and pyterigoideus muscles. Thus, computed tomography findings of masticatory myositis were also detected (Fig 3).

Figure 3: Axial cross-section taken at the level of ramus mandible on computed tomography examination. Masseter muscle (M), Temporalis muscle (T), Pterigoideus muscle (P), Normal muscle attenuation (white asterixes), Hypoateanuated areas in 3 maticatory muscles (white arrow heads).
Şekil 3: Bilgisayarlı tomografide mandibular ramus hizasında alınan aksiyel kesit. Masseter kası (M), Temporalis kası (T), Pterigoideus kası (P), Normal kas attenuasyonu (beyaz asteriskler), 3 çiğneme kasındaki hipoatenüe alanlar (beyaz ok başları).

Figure 4: An axial section on computed tomography examination. Musculus Digastricus in the ventral of the mandible (D). Digastricus muscle were observed in normal attenuation, unlike the other 3 masticatory muscles.
Şekil 4: Bilgisayarlı tomografide aksiyel kesit. Mandibulanın ventralinde muskulus digastricus (D). Diğer 3 kas grubunun aksine digastricus kasının normal attenuasyonu.

While other axial sections were examined, no other hypoatenuated areas were found in the digastricus muscles compared to the other 3 muscles (Fig 4).

When the other sections were examined, there was also a significant hypertrophy in the mandibular lymph nodes, especially in the caudal area of the cranium (Fig 5).

Figure 5: On computed tomography examination, an axial section in the region immediately corresponding to the caudal to the cranium. Bilateral hypertrophy in mandibular lymphnodes (white asterixes).

Şekil 5: Bilgisayarlı tomografide kraniyumun hemen kaudaline kalan bölgede aksiyel kesit. Mandibular lenf nodüllerinde bilateral hipertrofi (beyaz asteriskler).

Diagnosis and finding

During the initial examination a blood was collected and laboratory examination was performed. There was an increase in eosinophil values on hemogram. The normal range was 0.06 - 1.23 K / µL and the eosinophil value was 1.76 K / µL. Eosinophil level was found to be within normal limits in blood tests performed at next follow-up. A muscle biopsy was not performed. The patient was diagnosed with masticatory myositis and started corticosteroid treatment because of the eosinophil increase observed in the patient's blood examination, inability to open the jaw, and absence of any additional findings that would lead to the clinical state observed on the

computed tomography. Methylprednisolone sodium succinate was prescribed 6 mg / kg on the first day and 4 mg / kg on the next 4 days and 3 mg / kg on the next 4 days. On the 5th day examination, hypertrophy of the masseter muscles regressed and atrophy started to develop in temporalis muscles (Fig 6).

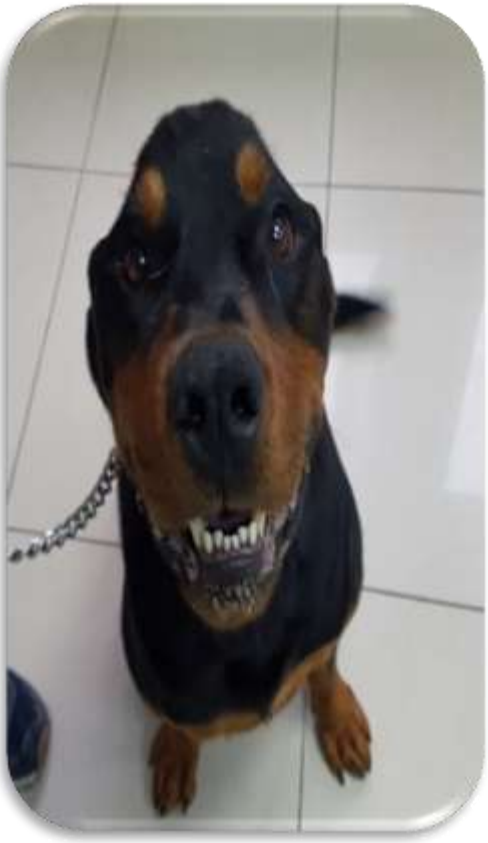

Figure 6: The appearance of atrophic temporalis muscles 5th days after the treatment.
Şekil 6: Hastanın 5. günündeki muayenesinde atrofiye olmuş temporal kasların görüntüsü

The patient could open his mouth more and eat more easily. On the 10th day follow-up examination, the patient was able to open his mouth 6 cm and was still in pain. On the same day, laser treatment was initiated to further reduce pain. It was decided to perform the therapy 3 days a week (Monday-Wednesday-Friday) at intervals of one day. During 3rd laser session, dog could eat more easily. In examination, the pain in the masseter muscles was decreased but no change was observed in temporalis muscles. However, there was no improvement in the muscles, so the patient's health status got worse the following days. For these reasons euthanasia was decided.

DISCUSSION

Inflammatory myopathies are most common in dogs and are most commonly seen as masticatory muscle myositis (Nanai et al., 2009). Muscle myositis is an inflammatory myopathy and selectively affects the chewing muscles of temporalis, masseter, pyterigoideus and digastricus muscle groups. This muscle group contains 2M myofibrils, which are specific to this muscle group and are not found in the extremities (Paciello et al., 2007). In dogs in the acute phase of the disease, typically bilateral swelling, painful masticatory muscles, jaw pain and trismus are seen. Even under general anesthesia, the jaws often cannot be opened. In chronic cases, the muscles are atrophic and the trismus may continue (Czerwinski et al., 2015). In this case the dog had pain in the jaw, difficulty in opening the jaw, pain in the masseter muscles and atrophy of the temporalis muscles. He could barely open her jaw under anesthesia.

This disease was formerly called eosinophilic myositis or atrophic myositis (Melmed et al., 2004). Although some dogs have eosinophilia, this finding does not appear to be consistent. In the literature, predominant cell-type infiltrating the masticatory muscles is eosinophils (Reiter et al., 2007). The laboratory examinations revealed elevated levels of eosinophils in the blood (1,76 K/µL).

Diagnostic imaging plays a key role in the diagnosis of many diseases, including retrobulbar diseases and myositis, the causes of exophthalmus and strabismus, retrobulbar abscesses, tumors and polymyositis, foreign body, temporomandibular joint instability due to fracture or luxation (Czerwinski et al. 2015). Traditional radiography is commonly used to eliminate skeletal abnormalities in dogs that cannot open their mouths (Reiter et al., 2007). In this case, computed tomography examination was used. The aim of this study was to diagnose masticatory muscle myositis with computed tomography examination and other diagnostic methods. Computed tomography examination provides excellent sensitivity in the characteristics of the bones and soft tissues of the head region (Reiter et al., 2007).

Magnetic resonance imaging (MRI) is used as an adjunctive test for myopathies in human health. However, its use in animal health has not been fully described (Czerwinski et al., 2015). For this reason, we preferred computed tomography instead of MRI.

As a result, the clinical, laboratory and radiological (computed tomography) findings obtained by presenting this study were similar with the previous studies and the patient was diagnosed with masticatory muscle myositis.

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