

Severe Tongue Necrosis due to Pine Processionary Larvae Contact in Three Dogs

Üç Köpekte Çam Kesesi Larva Teması Nedeniyle Şiddetli Dil Nekrozu

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Abstract: Contact with the larvae of the pine processionary constitutes severe allergic reactions both in humans and animals. This study was aimed to reports clinical sings, treatment and prognosis in the three dogs who were in acute phase that contacted to pine processionary larvae. The clinical sigs included excessive salivation, halitosis and oedema, and necrosis of the tongue. Treatment was started immediately and necrotic areas disappeared. However, tissue loss was seen in the tongue during follow-up.

Keywords: Pine processionary larvae, dog, tongue necrosis.

Öz: Çam kese böceği larvaları ile temas, hem insanlarda hem de hayvanlarda ciddi alerjik reaksiyonlar oluşturur. Bu çalışmanın amacı, çam kese larvaları ile temas eden akut fazdaki üç köpeğin klinik belirtileri, tedavi ve prognozunu anlatmaktır. Klinik belirtiler arasında aşırı tükürük salgısı, ağız kokusu ve ödem ve dilin nekrozu vardı. Hemen tedaviye başlandı ve nekrotik alanlar kayboldu. Ancak takiplerinde dilde doku kaybı görüldü.

Anahtar Kelimeler: Çam kese böceği larvası, köpek, dil nekrozu.

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Introduction

The pine processionary is a member of the Lepidoptera species and family Notodontidae. Caterpillars of the pine processionary moth (PPM) Among approximately 200 species of Lepidoptera *Thaumetopoea wilkinsoni* (*Th. Wilkinsoni*) and *Thaumetopoea pityocampa* (*Th. Pityocampa*) are being the most common (Vega et al., 1999). *Th. pityocampa* is seen in central and western Mediterranean countries, while *Th. wilkinsoni* occurs in the Near East and Turkey (Bruchim et al., 2005, Yıldar and Güzel, 2013). Members of this species live in pines and can harm pine trees, humans, and animals and have been described to be the most relevant allergens in Europe with allergenic properties they have (Rodriguez-Mahillo et al., 2012; Vega et al., 1999).

The larvae have five different stages however, the L4 and L5 stages are causing the disease. In the last two stages, the larvae have hairs containing chitinous spines that can penetrate the epidermis and cause dermatitis and other clinical signs (Bruchim et al., 2005). The spines of larval hair contain at least seven irritant allergens, a toxic protein called thaumetopoein is the most important (Lamy et al., 1986; Rodriguez-Mahillo et al., 2012). Thaumetopoein has a effect on mast cells that cause IgE independent degranulation which is responsible for the caterpillar's urticaria-forming ability (Lamy et al., 1986).

The symptoms may vary according to the direct contact with the larvae, ingestion of larvae, and inhaling the toxic substance. Direct contact may lead to several symptoms and disorders like

urticaria, edema, conjunctivitis, temporary blindness, hypertension, and anaphylaxis. Ingestion of the larvae causes edema of the tongue and frenulum, vesicles, abdominal pain, vomiting, gastritis, and enteritis. Inhaling the toxic and irritant substance causes dyspnea, rhinopharyngitis, and bronchitis (Bruchim et al., 2005; Lamy et al., 1986; Yildar and Güzel, 2013). In dogs, the most reported clinical sign is tongue edema and necrosis, ptyalism, vomiting, dyspnoea, hyperthermia, hypovolemia, and diarrhea (Bruchim et al., 2005; Niza et al., 2008; Pouzot-Nevoret et al., 2017). Ocular lesions, such as keratitis anterior uveitis, were also reported (Costa et al., 2016).

In the present case report, clinical evaluation, treatment, and outcome of three dogs exposed to pine processionary larvae were described.

Case Presentation

The material of this case report consisted of 3 dogs [One Husky (Female, 6-month-old), 1 Kangal (Female, 3-year-old), and one Pointer (Female, 22 month-old)] brought to the Burdur Mehmet Akif Ersoy University, Faculty of Veterinary Medicine, Department of Internal Medicine between April and May 2017, with a complaint of dysphagia, salivation, and lethargy. In the history from the owners, there was a contact with pine processionary larvae on the ground.

Clinical examinations revealed body temperature 38.7-39.9 °C, excessive salivation, and halitosis in dogs (Fig.1, Fig. 2, Fig.3). The tip of the tongue was necrotic in all three dogs. One dog also had facial oedema. Other physical findings were normal. Blood samples were obtained from all dogs and hematologic and biochemical analyses were performed. ALP and AST values were high in all three dogs, and WBC values were high only in the six-month-old Husky.



Figure 1. Excess salivation and lesion on the tongue



Figure 2. Lingual necrosis 24h after contact with Pine Processionary Larvae

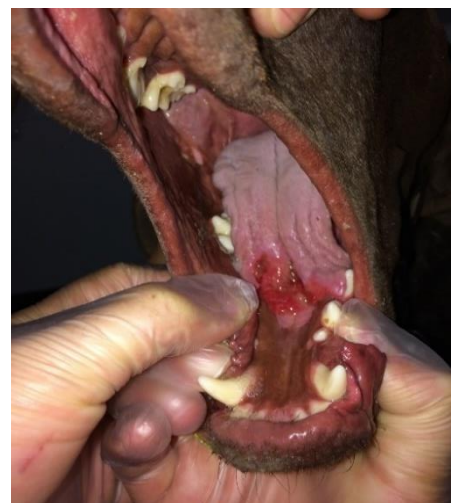


Figure 3. Necrosis on the tip of the tongue

The treatment adapted from the literature (Yildar and Güzel, 2013) consists of flushing the oral cavity to remove the larvae hairs in the mouth was done using 0.9% saline solution. Systemic antihistaminic (Pheniramine hydrogen maleate, 0.5 mg/ kg, intramuscularly (IM) BID) and corticosteroids (dexamethasone, 0,3 mg/kg, intravenously (IV) were administered for 3 days. All dogs also received ceftriaxone sodium (25 mg/kg, IV BID) to prevent a possible infection. To promote the healing of the necrotic areas, dexpanthenol (11 mg/kg, IM), an oral antiseptic (10% Glycerin iode BID), and lidocaine gel was also administered. An IV balanced solution with 5% dextrose was given to all dogs when necessary.

The follow-up clinical examination carried out a week later showed remission of the oedema and necrosis in the tongue. On the seventh and 14th days after treatment cessation, it was observed that the lesions in the tongue regressed, and the complete healing was in the 4th week, but there was tissue loss in the tongues (Fig.4).



Figure 4. Note the tissue loss on tip of the tongue

Discussion

Toxic protein thaumetopoein can produce a strong inflammatory reaction on the skin and mucous membranes after contact with pine processionary larvae. Envenomation affects humans and animals (Kozar et al., 1999; Niza et al., 2008). As reported previously (Bruchim et al.,

2005, Niza et al., 2008, Pouzot-Nevoret et al., 2017) pine processionary larvae exposure in dogs primarily occurs between March and April. However, one study showed that the months of presentation from ranged January to September (Pouzot-Nevoret et al., 2017). Consistent with the results of previous studies our cases were admitted to our hospital in April (two cases) and May (one case).

The clinical signs of pine processionary larvae occur from mechanical irritation by contact with the larvae hair and the following release of thaumetopoein (Rodriguez-Mahillo et al., 2012). In our case report, clinical signs were acute lingual and gingival oedema, ulceration, and necrosis. Tongue edema may evolve within hours to tongue necrosis in severe cases (Grundmann et al., 2000; Niza et al., 2008; Parlatur and Erdoğan, 2018; Pouzot-Nevoret et al., 2017; Yıldar and Güzel, 2013). Such lesions should be kept in mind in animals with excessive ptyalism. One report (Pouzot-Nevoret et al., 2017) stated that this sign strongly correlates with tongue injuries. Since accidental secondary hypersensitivity reaction had been reported in veterinary staff following contact with exposed animals (Bruchim et al., 2005), wearing gloves is important to protect the veterinarians and staff when treating or exploring the cause of excess salivation in dogs.

In the present case report, one dog had a rectal temperature above 39.9 °C. However, the other two dogs were normothermic. Hyperthermia is related to systemic inflammatory reaction caused by thaumetopoein (Rodriguez-Mahillo et al., 2012), and is associated with more severe tongue lesions (Pouzot-Nevoret et al., 2017). Similar to those reports hyperthermic dogs had severe tongue necrosis.

Results of previous studies (Niza et al., 2008; Costa et al., 2016), showed that ocular lesions were rare. Parallel with these results no ocular lesions were seen at admission or during treatment in our case report. However, an ophthalmic examination should be performed despite the low prevalence of ocular lesions.

The recommended treatment for the animals exposed to a pine processionary larvae consists of flushing of skin and mucosa may have come in contact and use of corticosteroids and antihistaminics to prevent inflammatory reactions (Kaszak et al., 2015, Pouzot-Nevoret et al., 2017). Oral flushing, in cases of ingestion and tongue involvement, was allowed the preservation of the tongue tissue. However, a delay in oral flushing after pine processionary larvae contact by more than 6 hours increases the risk of tongue necrosis (Pouzot-Nevoret et al., 2017). Although there was a delay in admission to the hospital more than 6 hours in the present case report, flushing of the oral cavity was performed in all 3 dogs. Tongue necrosis was present in all dogs. For this reason, the effect of irrigating the oral cavity on preventing the development of necrosis is unknown.

Pain control may alleviate discomfort and promote food intake (Bruchim et al., 2005). All three dogs in the present case report received pain medication topical anaesthetics (lidocaine).

Anaphylaxis or degree of tongue necrosis may affect prognosis. However, the prognosis for dogs was reported to be generally good to fair. In the present case report, the survival rate was 100%. During follow-ups, no dogs had a sequela or complication. Similar to the other reports (Niza et al., 2008; Parlatir and Erdoğan, 2018; Pouzot-Nevoret et al., 2017; Yildar and Güzel, 2013), the prognosis for dogs exposed to pine processionary larvae was good in the present report's cases.

In conclusion, it was observed that pine processionary larvae caused severe necrosis of the tongue in dogs, however, these necrotic areas disappeared with appropriate treatment, but tissue loss may occur in the tongue.

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