

Laryngeal Rhabdomyosarcoma in a dog: case report

[*Rabdomiossarcoma na laringe em cão: relato de caso*]

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ABSTRACT

The larynx is part of the upper respiratory tract and is responsible for phonation. It allows air to pass between the pharynx and the trachea, but prevents food from entering the airways. Laryngeal neoplasms, including rhabdomyosarcomas, are uncommon in dogs. However, these tumors can trigger numerous progressive clinical signs related to respiratory difficulty and altered phonation. The diagnosis of laryngeal cancer should be made based on the history and symptoms of the patient, combined with complementary tests. The treatment of choice is surgical excision, combined or not with chemotherapy. In view of the low incidence of laryngeal cancer, the objective of the present work was to describe a case of laryngeal rhabdomyosarcoma detected during necropsy of an adult dog and diagnosed by histopathology, in addition to raising awareness about the importance of the diagnosis and early therapy for the quality of life and survival of affected patients. The results showed that the location of the tumor impaired its early diagnosis. Although malignant, the animal did not develop metastases as has been described in the literature.

Keywords: oncology, small animals, rhabdomyosarcoma, respiratory system

RESUMO

A laringe é um dos órgãos que compõem o trato respiratório superior, sendo também responsável pela fonação. Permite a passagem do ar entre a faringe e traqueia, mas impede que alimentos adentrem as vias aéreas. As neoplasias laringeas, incluindo os rabdomiossarcomas, são incomuns em cães, porém, quando presentes, desencadeiam inúmeros sinais clínicos progressivos relacionados à dificuldade respiratória e à alteração na fonação. O diagnóstico das neoplasias na laringe deve ser baseado no histórico e na sintomatologia do paciente, associado a exames complementares. O tratamento de eleição é a exérese cirúrgica, concomitante ou não com a quimioterapia. Desse modo, diante da baixa incidência desse tipo neoplásico, inclusive na laringe, o objetivo do atual trabalho é descrever o caso de rabdomiossarcoma em laringe, detectado durante o exame de necropsia de um cão adulto e diagnosticado por histopatologia, bem como conscientizar sobre a importância do diagnóstico e da terapêutica precoce na qualidade de vida e sobrevida dos afetados. De acordo com a descrição do caso, pode-se admitir que a localização da neoplasia prejudicou o diagnóstico precoce e que, apesar de esta ser maligna, não houve metástases conforme descrição na literatura.

Palavras-chave: oncologia, pequenos animais, rabdomiossarcoma, sistema respiratório

INTRODUCTION

The larynx, which connects the pharynx to the trachea, consists of muscles, cartilage and ligaments that exert respiratory and phonatory function. Laryngeal neoplasms are rare in

domestic animals, including dogs (Ladds and Webster, 1971; Ramírez *et al.*, 2015), accounting for only 0.02% of all tumors; however, they are an important cause of morbidity and mortality (Yamate *et al.*, 2011).

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Rhabdomyosarcomas are soft tissue sarcomas associated with skeletal muscle (Kato *et al.*, 2012) that arise from primitive mesenchymal cells and are uncommon in the oral and nasal cavity (Brockus and Myers, 2004; Kimura *et al.*, 2012; Caserto, 2013; Russel *et al.*, 2015). They are non-odontogenic, solid, malignant, invasive tumors with a high metastatic potential (Chen *et al.*, 2009) that occur as single or multiple structures of various sizes. Recurrence is observed after surgical removal (Brockus and Myers, 2004). The neoplastic etiology of rhabdomyosarcoma is not yet fully understood, but it is believed that the tumor results from a combination of internal and environmental factors (Dias *et al.*, 2013). Most animals with rhabdomyosarcoma are of middle to advanced age, although it is not uncommon for tumors to be found in young animals (Ferro *et al.*, 2004).

The clinical signs vary according to the location of the primary tumor, but often include dysphagia, breathing difficulties with inspiratory stridor, hoarse barking (dysphonia) (Ramírez *et al.*, 2015), sialorrhea, and weight loss (Yamate *et al.*, 2011). However, it is not always possible to detect enlargement of the palpable cervical lymph nodes or local lymphadenopathy during physical examination (Chen *et al.*, 2009). The diagnosis of rhabdomyosarcoma should be made based on the clinical history, symptoms, x-ray of the chest and affected region, fine-needle aspiration biopsy, complementary laboratory tests, endoscopy, computed tomography, magnetic resonance, histopathology (Chen *et al.*, 2009), immunohistochemistry, and electron microscopy (Yamate *et al.*, 2011; Caserto, 2013; Ramírez *et al.*, 2015).

Treatment includes surgical removal (with or without endoscopy) and palliative clearing of the upper airways and oral cavity combined or not with systemic chemotherapy (Chen *et al.*, 2009). However, postoperative complications are directly related to glottal edema or stenosis, in addition to changes in the swallowing and phonation of the patient (Yamate *et al.*, 2011). The use of laser therapy and radiotherapy has been reported in humans. However, despite all

these therapeutic options, the risk of tumor recurrence is significant in all species (Brockus and Myers, 2004). The prognosis of patients with laryngeal cancer depends on an early diagnosis, tumor stage, recurrence, and the concomitant presence of other illnesses (Ferro *et al.*, 2004).

In view of the low incidence of laryngeal cancer in dogs, the aim of this study was to report a case of canine laryngeal rhabdomyosarcoma, highlighting its clinical features, diagnosis, and the therapeutic options available. In addition, this report aims to raise awareness of veterinarians and pet owners regarding the importance of periodic examination of the oral and nasal cavity of animals since early therapeutic intervention improves the quality of life and survival rates of affected patients.

CASE REPORT

A 5-year-old uncastrated male Fox Paulistinha (Brazilian Terrier) was sent for necropsy to a veterinary practice. The owner reported that the animal had exhibited progressive symptoms of intense dyspnea, cyanosis, cough, exercise intolerance and phonation disorder, which led to its death.

Post-mortem examination revealed enlargement of the larynx (approximately 1.5cm in diameter) in the cricoarytenoid muscles. The swelling was firm in consistency and areas of adhesion and an irregular surface were observed. Ulcerations were absent (Figure 1). The swelling caused a decrease in the tracheal lumen, an increase in the corresponding retropharyngeal lymph node, and thickening of the vocal folds.

Fragments of the nodule were collected and sent for histopathological examination, which demonstrated the proliferation of neoplastic cells originating from skeletal muscles. The cells were atypical and exhibited marked pleomorphism, with nuclear shape varying from round to polyhedral (Figure 2). The cytoplasm was scarce and irregular. Mitotic figures were present and marked areas of necrosis were observed.

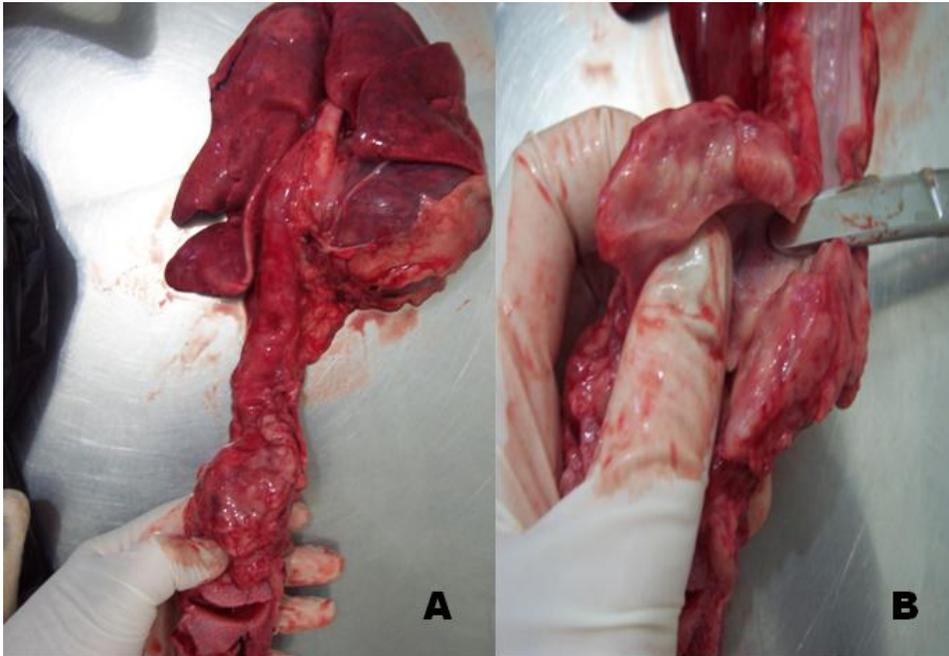


Figure 1. Photographic images (A and B) of volume increase of approximately 1.5cm in diameter in dog larynx, with irregular surface, areas of adhesion and absence of ulcerations (arrows).

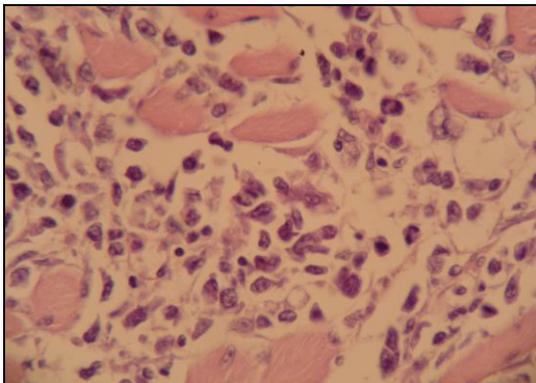


Figure 2. Photomicrograph of rhabdomyosarcoma in a dog (hematoxylin and eosin, 400x). Note the atypical cells exhibiting marked pleomorphism and nuclear shape varying from round to polyhedral.

DISCUSSION AND CONCLUSIONS

According to Yamate *et al.* (2011), as in humans, the incidence of laryngeal and pharyngeal cancers is low in dogs (Chen *et al.*, 2009). This fact makes it difficult to standardize factors such as the incidence, etiology, biological behavior, gender and breed predisposition, therapeutic options and prognosis of affected patients, and impairs the comparison between cases (Lujber

and Révész, 2011). According to Caserto (2013), the low prevalence of rhabdomyosarcoma described in the literature can be attributed to diagnostic failures and to an unfavorable prognosis due to rapid neoplastic staging.

Within this context, although rhabdomyosarcomas are uncommon in the oral cavity, Illanes (2002) described a case that resulted in unilateral atrophy of the masticatory muscles in a dog, and Kimura *et al.* (2012) reported the occurrence of a rapidly growing tumor in the gingiva of a young dog. Also in a dog, Brockus and Myers (2004) described an extremely invasive, adherent rhabdomyosarcoma in the tongue.

Many hypotheses have been proposed for the histogenesis of rhabdomyosarcomas. Since they can affect young animals, Ladds and Webster (1971) suggested rhabdomyosarcomas to arise from differentiated mature muscle fibers or from still immature embryonic myoblasts. Within this context, Caserto (2013) stated that the presence of mesenchymal stem cells with myogenic differentiation capacity may explain why this neoplasm is found in skeletal muscle tissue.

The clinical signs observed in the present patient agree with those found in the literature (Yamate *et al.*, 2011), except for oral bleeding reported by Ferro *et al.* (2004).

Complementary tests are essential to distinguish laryngeal neoplasms from exuberant scar tissue, abscesses, polyps, encapsulated foreign bodies, tissue hyperplasia, sarcoma and lymphoma (Ferro *et al.*, 2004; Caserto, 2013). However, these tests were not possible in the case reported here because the animal died before diagnostic investigation. The death of the animal was probably due to the silent evolution of the tumor, as well as to the absence of visible external anatomic deformities in the patient, impairing detection by the owner and an early diagnosis. According to Brockus and Myers (2004), another factor that can compromise the diagnosis of laryngeal cancers is the temperament of the animal, which may prevent accurate physical examination.

Although Kimura *et al.* (2012) reported a high metastatic potential of rhabdomyosarcomas, the present dog showed no signs of metastasis in the lungs or abdominal organs.

Taken together, the results obtained indicate that laryngeal neoplasms are often diagnosed late and that most animals are already in advanced stages of the disease at the time of detection, thus compromising their quality of life and survival.

Rhabdomyosarcomas are rare in the oral and nasal cavity. The canine laryngeal rhabdomyosarcoma reported in this study was solid and adherent to the musculature and may have ultimately caused the death of the animal.

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