

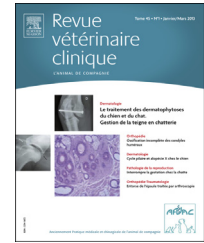


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CLINICAL CASE

First case report of pulmonary blastoma in a dog in Tunisia: A comparative study with human[☆]

Premier cas d'un blastome pulmonaire chez un chien en Tunisie : étude comparative avec l'Homme

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Summary Pulmonary blastoma (PB) is a rare biphasic tumor formed by mixed epithelial-and-mesenchymal elements. In this trial, we report a first case in Tunisia of a dog with multiple pulmonary masses characteristics of PB. At postmortem, the gross lesions were described as multiple white circumscribed masses throughout the lungs. Histological analysis of lungs shows that the tumor contains dual population of mesenchymal and epithelial neoplastic cells. Mesenchymal elements were immunoreactive for vimentin and neuron specific enolase. Epithelial cells lining tubules lumina were non-ciliated and cuboidal with central round nuclei showing strong immunoreactivity for cytokeratin. This study reveals that clinical, histological and immunohistochemical findings of PB in dog are similar to those in human PB.

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MOTS CLÉS

Blastome
pulmonaire ;
Chien ;
Homme ;
Immuno-histochimie

Résumé Le blastome pulmonaire (BP) est une tumeur biphasique rare formée par des éléments mixtes épithéliaux et mésenchymateux. Nous rapportons le premier cas en Tunisie d'un chien avec de multiples masses pulmonaires caractéristiques de BP. À l'autopsie, les principales lésions étaient décrites comme de multiples masses blanches circonscrites dans les poumons. L'analyse histologique des poumons montre que la tumeur contient une double population de cellules néoplasiques mésenchymateuses et épithéliales. Les éléments mésenchymateux étaient immunoréactifs pour la vimentine et l'énolase spécifique des neurones. Les tubules étaient tapissés par un épithélium cubique non cilié avec des noyaux circulaires centraux montrant une forte immunoréactivité pour la cytokératine. Cette étude révèle que les résultats cliniques, histologiques et immuno-histochimiques du BP chez le chien sont similaires à ceux chez l'Homme.

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Introduction

Pulmonary blastoma (PB) is a rare neoplasm that is composed of immature epithelial and/or mesenchymal tissues. Such features may resemble early embryological lung tissues [1,2]. The tumor is composed of malignant mesenchymal and epithelial elements, and any one of these components may dominate within a given tumor. Many of the mesenchymal cells have large hyperchromatic nuclei and scanty cytoplasm and are described as "blast-like." They were described in laboratory Rat in 1991 [3] as single case report, in the dog in 1993 [4], in cattle in 1994 [5], in equine in 2009 and 2010 [6,7] and were considered as a very rare primary malignant lung tumor in human being [1,8]. The occurrence of pulmonary blastoma in adult dog is consistent with the late development of the tumor such as in adult human [9]. The delayed onset of pulmonary blastomas was explained by the fact that pulmonary tissue in human beings continues to develop for at least 10 years after birth [9].

Otherwise, the tumor origin involves from a pluripotent cell of a single germ layer as occurs in Wilms tumor (nephroblastoma) [5]. In Tunisia, there is no data describing such disease in dogs.

In this report, we describe a first case of pulmonary blastoma in a dog, characterize histological and immunohistochemical features of the tumor, and compare the tumor profile with that observed in humans.

Observation

A 2-year-old male dog presented before his death, according to its owner, a dyspnea, cough and hemoptysis of one week duration. In postmortem, the autopsy, carried in the department of pathological anatomy of the National School of Veterinary Medicine of Sidi Thabet (Tunisia), revealed the presence of buccal and ocular mucosa cyanosis and amyotrophy. The thoracic cavity examination revealed multiple smooth white firm masses disseminated through the lungs with a diameter range from 2 to 10 cm (Fig. 1). They consisted of well-circumscribed nodules, grayish white with smooth texture and firm consistency. At the incision, bulky masses were necrotic and hemorrhagic (Fig. 1). Lymph nodes as well as the parietal pleura were not involved. No other significant findings were pointed out. The lesions were



Figure 1. Dog lungs presenting multiple smooth white firm masses disseminated through the lungs with a diameter ranged from 2 to 10 cm. Some of the most bulky masses are necrotic and hemorrhagic.

primarily consistent with a primary lung tumor requiring to be confirmed by histology.

Tissue samples from pulmonary masses were fixed in 10% buffered formalin then embedded in paraffin, sectioned at 3 μ m, stained with Haemalun and Eosin (HE), and examined by light microscopy. Serial histologic sections of formalin-fixed tissues from the tumors were used for immunohistochemical staining with streptavidin-biotin-alkaline phosphatase (AKO – France, K4061 ENVISION + DUAL LINK SYSTEM-HRP). The sections were incubated with Cytokeratin (M0821) clone MNF 116, monoclonal antibodies to vimentin (M0725) clone V9 and monoclonal antibodies to neuron specific enolase (NSE) (M0873) clone BBS/NC/VI-H14.

Histological analysis of tumor masses revealed neoplastic proliferation composed of two linked patterns: epithelial-and-mesenchymal (Fig. 2A). The epithelial component was constituted by tubular structures lined by simple nonciliated cuboidal to columnar cells (Fig. 2A). The mesenchymal component was composed of spindle-shaped neoplastic cells

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