

Cervical Paraganglioma Originated from Lingual Vein in a Boston Terrier Dog

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(Accepted: December 09, 2015)

Abstract : A 7-year-old castrated male Boston terrier dog was referred due to dyspnea and unilateral cervical mass. On physical examination, mass on left submandibular region was palpated. CT findings revealed this case could be the tumor originated from left lingual vein. The client refused further treatment and the patient expired because of respiratory failure 10 days after presentation. On necropsy, a well-defined firm mass which located in the left side of larynx was detected. Histopathological findings for the mass indicated polygonal tumor cells arranged in nest and separated by fibrovascular septa. We performed immunohistochemistry to evaluate of chromogranin A and tumor cells showed positive immunoreactivity for chromogranin A. Based on computed tomography (CT), histopathological and immunohistochemical findings, this case was definitely diagnosed to paraganglioma of the body on the lingual vein. This report describes the clinical findings, CT imaging characteristics, histopathologic and immunohistochemical features of paraganglioma arised from lingual vein in a dog.

Key words : dog, computed tomography, immunohistochemistry, paraganglioma, chemodectoma.

Introduction

The paraganglia is neural crest-derived endocrine organs and it could differentiate to chromaffin and non-chromaffin paraganglias (2,7,9). Paragangliomas are tumors of the paraganglionic tissues. Chromaffin paragangliomas are arised from chromaffin cells such as adrenal medulla and called pheochromocytomas (2,7,9,12). Non-chromaffin paragangliomas are arised from glomus cells such as carotid body, aortic body, and glomus jugulare and called glomus tumors (7,8,9). In a broad sense, paragangliomas includes all chromaffin and non-chromaffin type tumors, however this term tends to imply the nonchromaffin type tumors. In 1950, Mulligan suggested the term chemodectoma in non-chromaffin type tumor because most of them arised from chemoreceptor organs such as carotid body, and vagal body (10). However, paraganglioma is more appropriate term of the non-chromaffin type tumor because those tumors could not have distinct chemoreceptor functions (1,2,7,8,9,12).

Case

A 7-year-old castrated male Boston terrier dog was referred due to dyspnea and unilateral cervical mass. On physical examination, mass on left submandibular region was palpated. Complete blood counts and serum chemistry profiles

revealed no remarkable findings. Result of FNA showed many bare nuclei which were variable in size. On cervical plain radiographs, there was an ill defined soft tissue opacity mass adjacent to larynx and partial lytic lesion of laryngeal cartilage at the region of the retropharyngeal site (Fig 1C).

Computed Tomography (CT; Somatom Emotion Duo, Siemens AG, Munich, Germany) was performed just after radiographic examination and patient stabilization. In non-contrast images, a 6*5 cm sized, round, relatively well-defined and homogenous mass which compressed larynx was identified adjacent to the left side of the larynx. The trachea was displaced and compressed by the mass, but did not appear to be invaded (Fig 1A). There were diffusely well-defined hyperattenuating lesions and enhanced blood vessels with irregularly distribution in the contrast enhanced CT images (Fig 1B). In three dimensional reconstruction image of the mass region for increased diagnostic confidence, the left external jugular vein and left mandibular salivary gland were displaced laterally by the mass and, the details of the left lingual vein were completely lost (Fig 2A). Based on CT findings, we could suspect this case could be the tumor originated from left lingual vein. The client refused further treatment and the patient expired because of respiratory failure 10 days after presentation.

On necropsy, a well-defined firm mass which located in the left side of larynx was detected (Fig 2B). Histopathological findings for the mass indicated polygonal tumor cells arranged in nest and separated by fibrovascular septa (Fig 3A-B). We performed immunohistochemistry to evaluate chromogranin A (Abcam, Cambridge, MA, U.S.A.) and

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Fig 1. CT and radiography of the present case. Comparison of the axial CT images at the level of atlas in pre (A) and post (B) contrast enhancement. Pre contrast CT image demonstrates presence of 6*5 cm sized, round, relatively well defined, homogenous mass adjacent to the left side of the larynx, compressing the trachea (A). Post contrast CT image demonstrates contrast enhancement of blood vessels irregularly distributed inside the mass and presence of hyper-attenuated lesions at the parenchyma of mass (B). Radiogram of cervical region in ventrodorsal and right lateral projection (C). Right lateral cervical radiograph shows presence of a 3*5 cm sized and ill defined soft tissue opacity mass adjacent to larynx and partial lytic lesion of laryngeal cartilage at the region in the retropharyngeal site.

tumor cells showed positive immunoreactivity for chromogranin A (Fig 3C-D). Other organs including lymph nodes, heart, aortic and carotid body, adrenal glands, kidney, and liver showed no remarkable findings.

Based on CT, histopathological and immunohistochemical

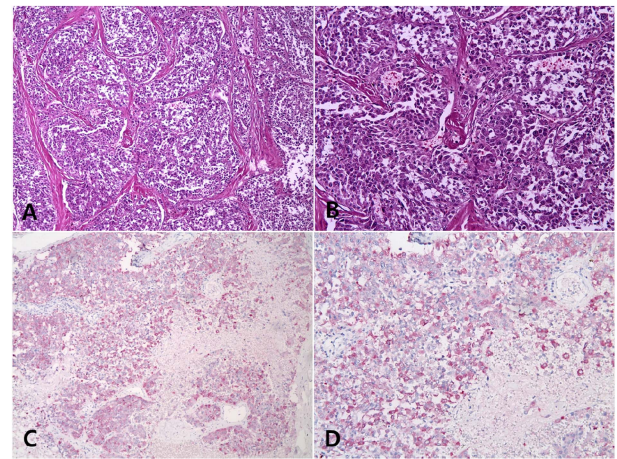


Fig 3. Histopathological (A and B) and immunohistochemical (C and D) results of the present case. polygonal tumor cells arranged in nest and separated by fibrovascular septa (Hematoxylin and eosin stain / A: $\times 100$, B: $\times 200$). Tumor cells show positive immunoreactivity for chromogranin A (C: $\times 100$, D: $\times 200$).

findings, this case was definitively diagnosed as paraganglioma arising from left lingual vein.

Discussion

Most cervical paragangliomas are benign tumors (1,9). In human medicine, less than 10% of all paragangliomas are malignant (9). The major criteria for malignancy of paragangliomas are not based on the histologic features but the presence of metastasis to the cervical lymph nodes or distant regions such as lung, bone, liver, and kidney (1). Paragangliomas are commonly reported in dogs (3-6,10-13). Paragangliomas which previously reported in dogs were located in carotid or aortic body, cardiac region (atrium), and cauda equina region (3-6,10-13). However, to the author's knowledge, there are no previous reports of paraganglioma arising from lingual vein in veterinary medicine.

In the present patient, cervical tumor was noted based on

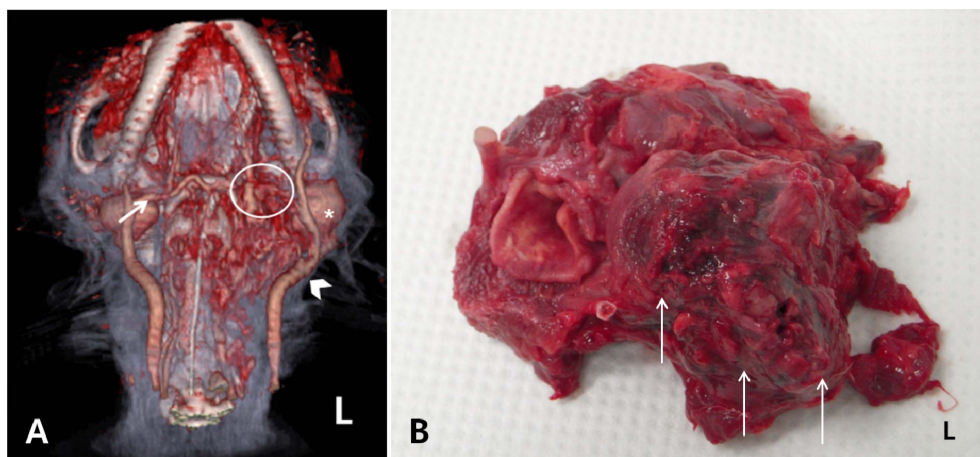


Fig 2. Three dimensional reconstruction image of the mass region using the computed tomography images (A). The mass in the left cranial cervical region was identified. The left external jugular vein (arrowhead) and left mandibular salivary gland (*) are displaced laterally. The details of the left lingual vein are completely lost (circled) (arrow: the right lingual vein). Necropsy finding of the present patient. A well-defined firm mass is located in the left side of larynx (B; arrows).

CT examination and no metastasis was found. Although the cervical tumor was benign, the patient expired because of respiratory failure. Histopathological features and immunohistochemical characteristics for chromogranin A supported the diagnosis of paraganglioma in this case. This case report well describes the clinical findings, CT imaging characteristics, histopathological and immunohistochemical features of paraganglioma arise from lingual vein in a dog.

Acknowledgments

This research was supported by the Basic Science Research Program through the National Research Foundation of Korea (NRF) funded by the Ministry of Education, Science and Technology (2011-0008358).

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보스턴 테리어에서 발생한 혀정맥 유래 목부위 결신경절종 증례

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요약 : 7살의 중성화된 수컷 보스턴테리어 개가 호흡곤란과 편측성 목부위 혹으로 내원하였다. 신체검사서 왼쪽 아래턱밑 부위의 혹이 촉진되었다. 컴퓨터단층촬영 검사 결과 이 혹은 왼쪽 혀정맥 유래의 종양으로 의심되었다. 보호자의 거부로 치료가 진행되지 못했으며 내원 10일 후 호흡부전으로 폐사하였다. 부검에서 경계가 분명한 혹이 왼쪽 후두부위에서 확인되었으며 병리조직학적, 면역조직화학적 검사가 시행되었다. 컴퓨터단층촬영, 병리조직학적, 면역조직화학적 검사를 토대로 왼쪽 혀정맥에서 유래한 목부위 결신경절종으로 최종진단되었다. 본 증례보고는 개에서 발생한 혀정맥 유래 목부위 결신경절종의 임상적, 컴퓨터단층촬영, 병리조직학적 및 면역조직화학적 특징들을 잘 나타내고 있다.

주요어 : 개, 컴퓨터단층촬영, 면역조직화학적 검사, 결신경절종, 화학수용체종