

Submandibular Oncocytoma with Prominent Contrast Enhancement on Computed Tomography

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Abstract

An oncocytoma is a rare salivary gland neoplasm, and about 11% of oncocytomas of the salivary gland occur in the submandibular gland. This is a case report of an oncocytoma of the submandibular gland that showed strong homogenous contrast enhancement on a computed tomography (CT) scan. We summarize our case and review the imaging features of prior literature on oncocytomas. The submandibular mass showed relatively high density on the precontrast CT scan [43 Hounsfield unit (HU)]. There was no remarkable calcification. The mass showed homogenously strong contrast enhancement (mean, 162 HU; maximum, 188 HU; and minimum, 130 HU). In the case presented here, the HU levels of the submandibular oncocytoma on a contrast-enhanced CT is remarkably higher than the HU levels of the salivary gland tumors described in prior literature. If a mass of the salivary gland has strong contrast enhancement on a CT scan, the occurrence of an oncocytoma of the salivary gland may be possible, the possibility of the oncocytoma of the salivary gland may be considered. (J Med Life Sci 2014;10(3):233-235)

Key Words : Oncocytoma, Submandibular Gland, Computed Tomography, Contrast Media, Doppler Ultrasonography

Introduction

Case Report

An oncocytoma is a rare salivary gland neoplasm that consists of about 1.6% of all salivary gland tumors¹). Oncocytomas usually occur in the parotid gland, and about 11% of oncocytomas of the salivary gland occur in the submandibular gland²). There is a sizable amount of prior literature on oncocytomas of the salivary gland. However, a few studies describe the detailed imaging features of oncocytomas of the parotid gland²⁻⁴). Recently, we witnessed a case of oncocytoma of the submandibular gland which showed strong homogenous contrast enhancement on a computed tomography (CT) scan. We will summarize our case and review the imaging features of prior literature on oncocytomas.

A seventy year-old man visited our otolaryngology outpatient clinic due to a palpable mass in the left-side submandibular area present for a few weeks prior. He did not suffer pain at the mass site and observed postprandial changes in the size. In physical examinations, there was a softly-palpated and movable mass in the left submandibular area of about 1 cm in size. There was no tenderness during palpation, and there were no abnormal findings at the mouth floor. A CT scan was performed with a scan delay of 40 seconds after the bolus injection of contrast agent (Ultravist 370, Bayer Schering, Berlin, Germany) with an injection rate of 3 cc/second. The left-side submandibular mass was 1.5cm in size and showed relatively high density on the precontrast CT scan (43 Hounsfield unit (HU), Fig. 1A). There was no remarkable calcification. The mass showed homogenously strong contrast enhancement (mean, 162 HU; maximum, 188 HU; and minimum, 130 HU; Fig. 1B, 1C). Ultrasound-guided fine-needle aspiration biopsy was performed for cytologic examination, and the cytologic result suggested the presence of a pleomorphic adenoma. The mass was hypoechoic and had a well-defined smooth

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margin. Color Doppler ultrasound revealed prominent central blood flow (Fig. 1D). The left submandibular gland was completely excised. During surgical excision, a soft mass was palpated on the left submandibular gland which did not invade the surface of the gland. There was no spillage of the tumor contents during surgical procedures. Grossly, the submandibular gland contained a tan-colored, 1.2 x 0.8 cm size mass. The mass was oval-shaped, well-circumscribed and encapsulated (Fig. 2). Pathological diagnosis confirmed the presence of an oncocytoma. Four days after the operation, the patient was discharged without complications.



Figure 1. A 70-year-old man with an incidental submandibular gland mass.

- (A) The mass has relatively high density on a precontrast CT scan (43 HU). There is no remarkable calcification.
- (B, C) The mass shows homogenously strong contrast enhancement. The HU levels of the mass on postcontrast CT scan are a mean of 162 HU, maximum of 188 HU, and minimum of 130 HU.
- (D) On ultrasonography, the mass is hypoechoic and has a well-defined smooth margin. Color Doppler study reveals a central feeding vessel.

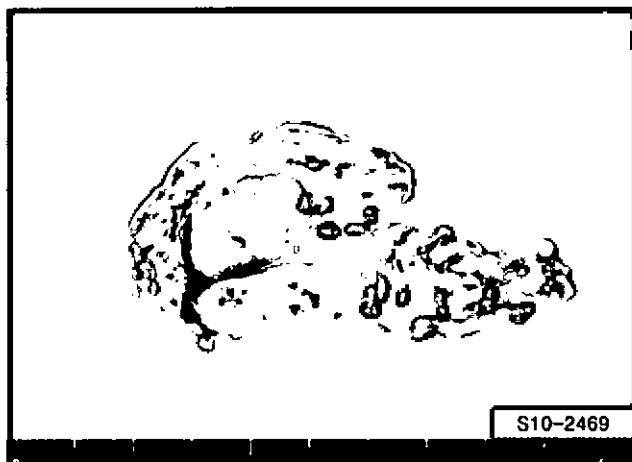


Figure 2. Gross appearance of the cut surface of the submandibular gland specimen. The submandibular gland contains a tan-colored, and well-circumscribed mass.

Discussion

There were few prior studies that described the imaging features of parotid oncocytomas²⁻⁴. The common imaging feature of the parotid oncocytoma was a well-defined mass with relatively homogenous contrast enhancement on CT or magnetic resonance imaging (MRI), but this was not specific to oncocytoma. When large, the parotid oncocytoma had a "deformable" appearance and a non-enhancing curvilinear cleft or cystic component⁴. Occasionally, oncocytoma of the salivary gland were invisible or vanishing in contrast-enhanced CT or MRI depending on the time of scanning after contrast enhancement^{3,4}.

Previous dynamic CT studies revealed the pattern contrast enhancement patterns and HU of tumors of the salivary gland^{5,6}. In those studies, the strongest contrast enhancement was seen in a Whartin tumor (96 HU for the early phase; 73-77 HU for the delay phase) and malignancy (71-84 HU for the early phase; 82-109 HU for the delay phase). There was no tumor that showed HU levels higher than 150 in those studies. Contrary to those reports, in our case we found a prominent contrast enhancement. The mean, maximum, and minimum HU levels were 162, 190, and 130, respectively, at a 40-second delay after contrast enhancement. This high HU level was equivalent to that of renal oncocytomas. The imaging features of the renal oncocytoma were similar to those of the oncocytoma of the salivary gland: relatively homogenous contrast enhancement and an occasional central scar in 10.7% of cases⁷. The previous dynamic CT study revealed the HU levels of the

renal oncocytoma; the HU levels were 171.6 ± 50.3 for the arterial phase and 128.7 ± 24.3 for the venous phase⁸. Although we did not evaluate microvessel density in our case, we think that this unusually strong contrast enhancement may be associated with microvessel density of the oncocytoma. In prior literature, the microvessel density (MVD) of the renal oncocytoma was similar or higher than the MVD of various renal cell carcinomas, and MVD was inversely correlated to the size of oncocytoma⁹. In our case, the size of the tumor was relatively small, and the MVD might be high enough to explain the unusually strong contrast enhancement.

In conclusion, we remarked quantitative value of HU in oncocytoma of the submandibular gland.

The HU levels after the use of the contrast agent are remarkably higher than that of the salivary gland tumor from prior literature. We cannot conclude that the HU levels of this case were typical for the oncocytoma of the salivary gland due to our limited experience. However, we suggest that strong contrast enhancement (about 150 HU) was equivalent to the HU levels of renal oncocytoma. In our opinion, if a mass of the salivary gland has strong contrast enhancement on CT, the possibility of the presence of oncocytoma of the salivary gland may be considered.

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