Cystadenocarcinoma Arising in the Oral Floor, A Case of Effective Use of Fine-Needle Aspiration Cytology and Biopsy

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Abstract

Cystadenocarcinoma of the salivary glands is rare. We here report a case of a 46-yearold Japanese man who presented with a painless, slow-growing mass in the right anterior oral floor, first noticed 4 months prior to our examination. Intraoral examination revealed a soft, well-defined oval mass measuring 20×20 mm in diameter. A sample obtained by fine-needle aspiration cytology (FNAC) had abundant atypical glandular cells, suggesting that the mass was malignant. Fine-needle aspiration biopsy (FNAB) findings revealed a low-grade carcinoma consistent with a papillary cystic tumor. A clinical diagnosis of salivary-gland tumor with a suspicion of low-grade carcinoma was made. The tumor was resected from the oral floor under general anesthesia. Histological examination revealed that the tumor was composed of small cystic lumens in a solid lobulated nodule arising from the minor salivary glands, with partial papillary proliferation in the cystic structures. The final diagnosis was cystadenocarcinoma of the oral floor. There was no evidence of recurrence or distant metastases at the 18-month follow-up. FNAC and FNAB allowed us to obtain a correct preoperative diagnosis, which helped us determine the best treatment and excision range for this patient. FNA is a useful, minimally invasive diagnostic tool for a possible malignancy involving the salivary glands.

Key words: Cystadenocarcinoma, Papillary cystadenocarcinoma, Salivary gland, Oral floor, Oral cancer

Introduction

Cystadenocarcinoma is a rare malignant tumor characterized by predominantly cystic growth, often with intraluminal papillary growth. Cystadenocarcinoma of the salivary gland lacks the additional specific histopathologic features that characterize other types of salivary-gland carcinomas with a cystic growth pattern.

Cystadenocarcinoma occurs most commonly in the parotid gland and in people over 50. Involvement of the sublingual gland is proportionately greater than with other salivary gland tumors, whether benign or malignant. Of the minor salivary gland sites, cystadenocarcinoma most frequently involves the buccal mucosa, the lips, or the palate [1], and it rarely arises in minor salivary glands in the oral floor.

We here report a rare case of cystadenocarcinoma arising from a minor salivary gland in the oral floor, and the effective use of fine-needle aspiration cytology (FNAC) and biopsy (FNAB) in obtaining a preoperative diagnosis.

Case Report

A 46-year-old Japanese man presented in June 2013 with a slow-growing, painless mass in the right anterior oral floor. He had first noticed the mass 4 months previously. He had a medical history of hypertension. The extraoral examination was negative for swelling, tenderness, or lymphadenopathy. The intraoral examination revealed a soft, no tenderness, well-defined and mobility oval mass measuring 20×20 mm in diameter (Figure 1). The surface was covered with normal mucosa. Salivary outflow from the submandibular duct was normal. T2-weighted magnetic resonance imaging (MRI) showed a moderate-intensity 34-mm mass originating from the right oral floor anterior to the sublingual gland (Figure 2A-2B). A computed tomography (CT) scan did not show a defined mass, and further contrast-enhanced CT and MRI did not show a contrast effect. We used an 18-gauge needle for the fine-needle aspiration (FNA) of loose soft tissues in the mass. FNAC showed abundant atypical glandular cells, suggesting malignancy, and FNAB revealed a low-grade carcinoma consistent with a papillary cystic tumor. After considering cystadenocarcinoma, intraductal papilloma, cystadenoma, and acinic cell carcinoma as differential diagnoses, we made a clinical diagnosis of salivary-gland tumor with suspected low-grade carcinoma.

Figure 1. Intraoral photograph taken at the first visit; the mass is visible at the right oral floor.

The tumor of the right oral floor was resected under general anesthesia, while leaving the mylohyoid muscle. The tumor appeared to be isolated, with no adhesion to surrounding tissue or no connection to the sublingual glands. No surgical complications developed post-operatively.

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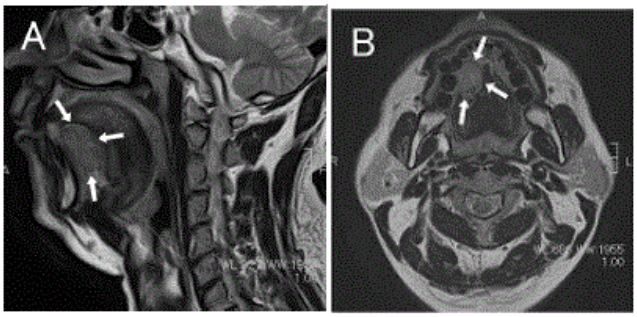

Figure 2. T2-weighted MR images showing a moderate-intensity mass at the right oral floor. Sagittal (A) and axial (B) views.

Histological examination of the tumor showed small cystic lumens in a solid lobulated nodule arising from the minor salivary glands (Figure 3A-3B). The surgical margins were negative. The tumor consisted of regularly arranged columnar epithelial cells with bright reticulum and a partial papillary proliferation pattern in the cystic structures. The nucleolus was clear, and there were slight mitotic figures. The tumor was demarcated from the surrounding tissue and was encapsulated. The tumor had a retraction growth pattern for the most part, but showed capsular and vascular invasion at the FNA puncture points. Immunohistochemical analysis was positive for S100, ki67, and AE1/3 (Figures 4A-4C), but negative for SMA, p63, CEA, and Vimentin. The MIB-1 (Ki-67) index was 12%. The final diagnosis was cystadenocarcinoma of the oral floor. There was no evidence of tumor recurrence or distant metastasis at an 18-month follow-up.

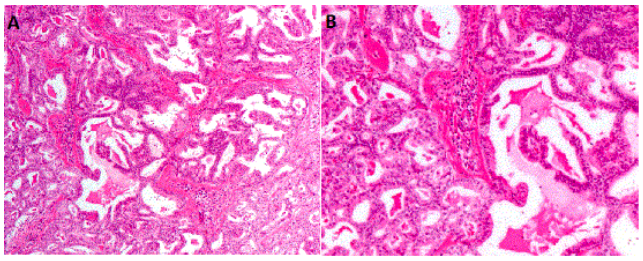

Figure 3. Histopathological features of the cystadenocarcinoma, with H&E staining. Low-power (A) and magnified (B) views.

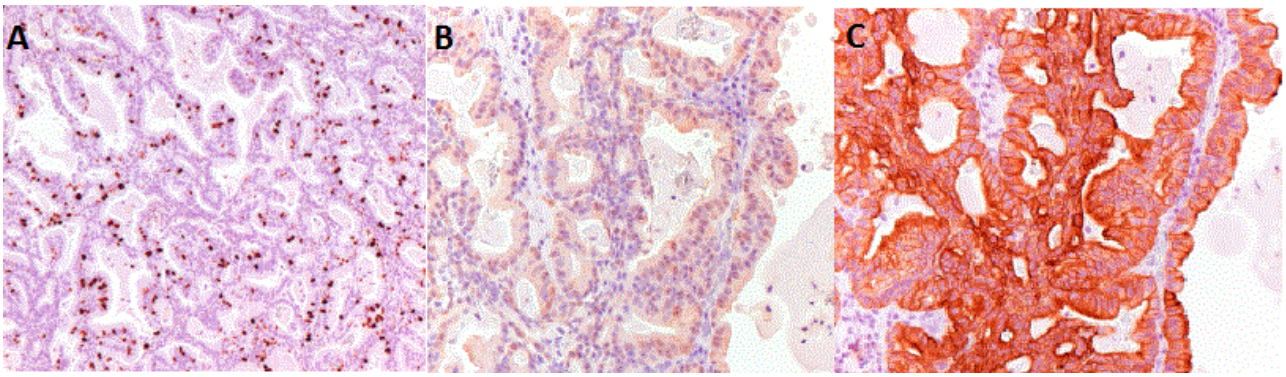

Figure 4. Immunohistochemical stainings are positive for S100 (A), ki67 (B), and AE1/3 (C).

Discussion

Cystadenocarcinoma, also termed papillary cystadenocarcinoma, mucus-producing adenopapillary (non-epidermoid) carcinoma, malignant papillary cystadenoma, or low-grade papillary cystadenocarcinoma [1], usually presents as an asymptomatic, slow-growing mass. Cystadenocarcinomas almost always have low-grade malignancy, and rarely present with lymph-node or distant metastasis. While a correct preoperative diagnosis is extremely important to determine the best treatment method and excision range, the clinical diagnosis of cystadenocarcinoma is difficult, because its characteristics and development patterns are similar to those of benign tumors. If the typical finding of infiltration in low-grade malignant tumors is absent, a cystadenocarcinoma may look very much like a benign tumor on MRI or CT images. Thus, histopathological diagnosis is required in addition to CT or MR imaging. In tumors arising from the salivary glands, diagnosis is further complicated by the varied histological types, ranging from benign to high-grade malignancy, which may be present within the same tumor.

The minimally invasive nature of FNA makes it useful for examining potentially proliferative, metastatic tumors in salivary glands. FNA is commonly used to investigate lumps or masses just beneath the skin, and the aspirated sample is analyzed for cytology (FNAC) or for histology of the biopsy specimen (FNAB). However, FNAC and FNAB have the disadvantage of possible sampling and interpretation errors. Although the invasive testing of malignant tumors should be kept to a minimum, it is advisable to obtain several specimens from a few puncture points for an accurate diagnosis.

There are 24 previously reported cases of salivary gland cystadenocarcinoma in the English literature (included our case). Table 1 summarizes the clinical and FNAB/FNAC features of these cases. The cases include 19 men and 5 women aged 8–80 years (median, 62.5 years). Cystadenocarcinoma occurred in the parotid glands in 5 patients, the submandibular glands in 5, the tongue in 3, the mandibular bones in 3, the oral floor in 2, the upper lip in 2, the sublingual glands in 2, the upper neck in 1, and the palate in 1. The cystadenocarcinoma was treated with surgery alone in 17 cases, surgery with post-operative adjuvant radiotherapy in 2, concurrent chemoradiotherapy (CCRT) in 1, boron

neutron capture therapy (BNCT) in 1, and by surgery for the initial tumor and radiotherapy for a recurrence in 2 cases. And a patient refused any treatments. There was not the reported case that followed an outcome of the death after treatment. FNAC was used to obtain a pretreatment diagnosis in 8 cases (including our present case); 5 of these were diagnosed with a malignant or suspicious tumor and 2 with benign tumors, and 1 with the test specimen was unsatisfactory. FNAB was performed in 5 cases, including ours, 2 of these were diagnosed with a malignant tumor and 1 with benign tumors, and 2 with the test specimen was unsatisfactory. Retrospective FNAC studies in salivary glands have reported 68–94% sensitivity, 87–95% specificity, and 82–91% accuracy [2-4].

Table 1. Literature review of cystadenocarcinoma of the salivary glands.

	Author	Issue	Age (years)	Sex	Site	Tumor size (mm)	Metastasis	FNAC	FNAB	Treatment
1	Pollett et al. [5]	1997	80	M	Tongue	30×40	Lymph node			Resection, RTa(recurrence)
2	Kobayashi et al.	1999	55	M	Sublingual gland					Resection
3	Nakagawa et al. [8]	2002	72	M	Tongue	35×20	Lymph node			Resection
4	Aydin et al.	2005	80	F	Upper lip	20×20				Resection
5	Harimaya et al.	2006	54	M	Submandibular gland	30×40		b		Resection
6	Tomioka et al.	2006	61	M	Oral floor	23×21				Resection
7	Johnston et al.	2006	73	F	Mandibular bone	20×20×12				Resection
8	Cavalcante et al. [6]	2007	79	M	Palate	50				No treatment
9	Yamada et al. [7]	2007	67	M	Sublingual gland	30×25×3				Resection
10	Aloudah et al.	2008	57	M	Parotid gland	60×50		m		Resection
11	Gallego et al. [13]	2008	34	M	Parotid gland	60			b	Resection
12	Kimura et al.	2008	78	F	Upper lip					BNCTc
13	Agarwal et al. [9]	2008	8	M	Submandibular gland	36×14×33	Lymph node	m		Resection RTa(recurrence)
		2008	55	M	Parotid gland	30				Resection
14	Kawahara et al.	2009	23	M	Parotid gland	30×35		b		Resection
15	Koç et al.	2010	74	M	Submandibular gland	90×50×35		i	i	Resection
16	Etit et al. [10]	2011	57	M	Tongue	18×10×10	Lymph node			Resection+RTa(adjuvant)
17	Takei et al.	2012	64	F	Mandibular bone	35×25				Resection
18	Enomoto et al. [11]	2012	28	M	Upper neck	50	Lymph node	m		Resection
19	Boyrie et al. [12]	2013	69	M	Parotid gland		Multiple bone		m	CCRTb
20	Mardi et al.	2013	67	M	Submandibular gland	50×40		m		Resection
21	Zgang et al.	2014	44	M	Submandibular gland	70×60				Resection
22	Srivanitchapoom et al.	2014	65	F	Mandibular bone	70×75			i	Resection+RTa(adjuvant)
23	Present case	2015	46	M	Oral floor	20×20		m	m	Resection

Our present patient had a histologic type of low-grade malignancy without lymph-node or distant metastasis. Several of the cases reported in the literature may have involved more aggressive cystadenocarcinomas with higher-grade pathological features [5-7], since lymph-node metastasis [5,8-11] or distant metastasis [12] was present. Table 1 appeared to give 5 instances of lymph-node metastasis in 24 cases. High-grade malignancy may be indicative of perineural infiltration, vascular or lymphatic channel invasion, infiltration of surrounding connective tissue, or regional lymph-node metastasis. In these cases, the mitotic activity was high and there were occasional abnormal mitotic figures [13].

Cystadenocarcinomas are usually well circumscribed but not encapsulated [1]. In our present case, connective tissue probably formed the capsule around the tumor, and proliferative cell invasion was observed within the capsule. This originally small cystic tumor showed slow papillary growth with repetitive cell proliferation. The fibrous connective tissue remaining after the rupture of the cystic structure formed a capsule-like structure. The tumor in the present case also had lobulated growth. These findings suggested that the tumor grew over a long period of time, supporting the finding of low-grade malignancy. The presence or absence of atypical cells is important in determining a diagnosis of malignancy. In our case, we observed atypical cells of a small number, atypical structures, papillary growth, and the absence of well-equipped structure at the gland and lumen. An MIB-1 index of 12% also contributed to a diagnosis of malignancy.

In conclusion, this case was diagnosed as a low-grade cystadenocarcinoma arising from a salivary gland in the oral floor. FNAC and FNAB allowed us to obtain an accurate diagnosis with minimal damage to the tissue, and having the correct diagnosis prior to surgery was helpful for the surgeon and beneficial for the patient.

Although cystadenocarcinomas generally have low malignancy and grow slowly, there are several reports of cervical lymph-node metastasis and distant metastasis. Careful long-term follow-up is necessary after treating cystadenocarcinoma.

Conflict of Interests

None declared.

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None.

Ethical Approval

Not required.

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