CASE REPORT

Metastasis to the submandibular gland in oral cavity carcinoma

Masaya Okura *, Takeshi Harada, Seiji Iida, Tomonao Aikawa, Mikihiko Kogo

The First Department of Oral and Maxillofacial Surgery, Osaka University, Graduate School of Dentistry, Osaka 565-0871, Japan

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Introduction

The lymphatic drainage of the oral cavity enters cervical lymph nodes. The presence or absence of cervical lymph node metastases is the most important prognostic factor for survival of head and neck cancers.1–3 Neck dissection is a time-honored procedure used to treat metastatic carcinoma to the neck.4 Level I of the neck includes pre-glandular and post-glandular nodes, and pre-vascular and post-vascular nodes. The submandibular gland is included in the specimen when these nodes are removed. It was demonstrated that the submandibular gland has no intraparenchymal lymph nodes5,6 and that the tumor involvement in the submandibular gland must be through extension from a locally involved lymph nodes or the primary tumor.7 Therefore, functional suprathyroid neck dissection by preserving the submandibular gland for an early stage carcinoma of the lower lip8 and submandibular gland transfer for preventing xerostomia due to irradiation9,10 have been reported.

We present a case demonstrating intraparenchymal metastasis in the submandibular gland.

Case report

A 40-year-old man was initially seen with a 6-month history of left tongue pain. He had the habit of smoking 20 cigarettes and consuming alcohol, one bottle of beer per day for 20 years. Examination revealed a 2.5-cm left tongue ulcer with no palpable masses in the neck. A CT scan demonstrated a tumor of the left lateral mobile tongue with no evidence of lymphadenopathy, and an ultrasound examina-
tion showed no evidence of lymph node metastases. A left partial glossectomy was performed with a transoral approach and primary closure. No elective neck treatment was performed. A pathologic assessment revealed 16 mm × 8 mm of poorly differentiated squamous cell carcinoma with clear margins at the surrounding epithelium, but a 3-mm margin at the deep invasive front. The patient has elected to undergo a close follow-up observation rather than further treatment including excision of the tongue and elective neck dissection. During 6 months after the initial surgery, a CT scan, an MRI and two ultrasound examinations demonstrated no recurrence and no lymph node metastases. Eight months after the surgery, however, a 2-mm white lesion of the left tongue and a slight swelling of the left submandibular gland with normal saliva flow were found. A CT scan demonstrated no evidence of local recurrence and lymph node metastases (Fig. 1), but an ultrasound examination revealed that within the left submandibular parenchyma a 16 mm × 12 mm × 11 mm area had an irregular margin with hypoechoic areas (Fig. 2). A left partial glossectomy was performed with a continuity of modified radical neck dissection. The gross appearance of the submandibular gland showed that the tumor was located within the submandibular parenchyma and inside the submandibular aponeurotic envelope (Fig. 3). A pathologic assessment revealed that metastatic tumor cells were contiguous with the submandibular parenchyma, and no lymphoid tissue was identified (Fig. 4). Tumor cells involved a 3-mm post-glandular lymph node and spread into the extracapsule. The recurrent tongue tumor was 2-mm in size without invading the underlying muscle. Neither tongue tumor nor the metastatic tumor in the lymph node was connected with the submandibular gland. Post-operative radiotherapy (60 Gy) was performed. Six months after the salvage operation, the patient developed bilateral pulmonary metastases followed by multiple spinal metastases, and
died 4 months after the development of the distant metastases with no evidence of loco-regional recurrence.

Discussion

Metastatic spread to the submandibular gland is an uncommon disorder. In the largest series from the Armed Force Institute of Pathology salivary gland tumors, the head and neck primary sites that metastasized into the submandibular gland were only three lips and one hypopharynx. The majority of primary tumors metastasizing to the parotid gland originate in the head and neck, while those metastasizing to the submandibular gland originate below the clavicles (breast, kidney, and lung). This present case is of a squamous cell carcinoma of the tongue metastasized to the submandibular gland and has not yet been reported to the best of our knowledge. It was reported that the submandibular gland was only involved in cases in which the primary tumor was in close proximity to the gland or when metastasis to level I of the neck had occurred with an extension from a locally involved lymph node into the submandibular gland. The report does not apply to this present case. The submandibular metastasis is likely to be through a hematogenous spread of cancer, because of the subsequent development of multiple spinal metastases and the absence of lymph nodes in the submandibular gland.

Recent studies have demonstrated that the submandibular gland can undergo transplantation out of the neck with subsequent reimplantation, as a possible means of protection from the effects of radiation. In addition, functional neck dissection preserving the submandibular gland for early lip cancer was also reported to be a reliable diagnostic method for N0 neck. It appears that those preserving methods must give attention to submandibular metastasis. A contrast-enhanced CT scan did not enable the detection of the tumor within the gland, but ultrasonography is considered a reliable technique for the detection of submandibular metastasis.

References