Carcinoma of Maxillary Gingiva with Non-specific Cervical Lymph Node Swelling

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Abstract

Swelling of the cervical lymph nodes may indicate lymphadenitis, malignant lymphoma, or metastasis. Lymph nodes larger than 10 mm on computed tomography (CT) are strongly indicative of postoperative metastasis from carcinoma. Here, we report a case of large, inflamed lymph nodes mimicking metastasis. The patient was a 76-year-old woman who experienced discomfort in the left-side maxillary gingiva commencing in August 2011. By September, the area had become painful, causing her to visit the Tokyo Dental College Chiba Hospital, at which time a 75 $\times$ 50-mm swollen ulcer was observed in the maxillary gingiva on the left side. A CT image revealed a neoplastic lesion between the alveolar bone on the left side of the maxilla and the base of the maxillary sinus, together with evidence of osteoclastic activity. The bilateral cervical lymph nodes were Level II and had a uniform interior of approximately 5 mm. The lesion was subsequently excised under general anesthesia. At 34 days postoperatively, CT imaging revealed bilateral 40-mm internal heterogeneous lymphadenopathy at Level II. No inflammation of the maxillary gingiva was observed, however, and blood tests revealed no inflammatory findings. Bilateral cervical lymph node metastasis was diagnosed based on CT and oral cavity observation. Radical neck dissection of left cervical region was performed under general anesthesia. Histopathological examination of the lymph nodes revealed no metastasis at Levels I–V, however. The reason for this increase in lymph node size is discussed.

Key words: Carcinoma of the maxillary gingiva — Non-specific lymph node — Computed tomography — Squamous cell carcinoma — Lymphadenitis
Introduction

Swelling of the cervical lymph nodes may indicate lymphadenitis\(^5\), malignant lymphoma\(^5\), or lymph node metastasis\(^4\). In cases where the nodes are larger than 10 mm on postoperative computed tomography (CT) images of a malignant tumor, metastasis can be assumed. Cases of lymphadenopathy where the nodes have exceeded 15 mm, in particular, have often been reported as metastasis\(^2\). In the present case, bilateral swelling of the lymph nodes to 40 mm was observed on CT images obtained at 4 weeks after excision of a carcinoma from the maxillary gingiva, leading to a diagnosis of lymph node metastasis. To our knowledge, no studies to date have reported lymphadenitis based on the results of pathological examination after total dissection of the cervical lymph nodes. Here, we report a case of swelling of the lymph nodes which was diagnosed as nonspecific lymphadenitis occurring after excision of a carcinoma.

Case Report

The patient was a 76-year-old woman who reported experiencing discomfort in the left-side maxillary gingiva commencing in August 2011. By September, the area had become painful, and in October she consulted the Department of Dental and Oral Maxillofacial Surgery at the Tokyo Metropolitan Tama Medical Center.

The patient had a history of hypertension and was on oral nifedipine (Adalat\(^5\)) and enalapril maleate (Renivase\(^8\)). Her family history showed no remarkable findings. The patient was 143 cm in height, 59 kg in weight, and had a BMI of 28.9. The nutritional conditions were moderately favorable. Her facial features were bilaterally symmetrical, and there were no signs of lockjaw, nasal bleeding, or obstruction. A 75×50-mm swollen ulcer was observed in the maxillary gingiva on the left side (Fig. 1). The maxilla was edentulous.

Computed tomography revealed a lesion between the alveolar bone and maxillary sinus on the left side, together with evidence of osteoclastic activity. Although the lesion had invaded the maxillary sinus, the pyriform aperture, orbital floor, and zygomatic bones were unaffected. The bilateral cervical lymph nodes affected were at Level II and had a uniform interior of approximately 5 mm (Fig. 2). The clinical diagnosis was a Stage IVa (T4, N0, M0) carcinoma of the maxillary gingiva on the left side.

In October 2011, a biopsy was performed under local anesthesia and squamous cell carcinoma diagnosed. Combination therapy with tegafur, gimeracil, and oteracil (100 mg/day) was orally administered over 14 days. Due to the carcinoma, the maxillary gingiva had to be resected under general anesthesia. Weber incision was performed and the tumor resected. Bone was resected from the left maxilla, from the anterior nasal aperture to the right canine. The upper margin was directly under the infraorbital foramen, and included the left inferior concha; the posterior margin was formed by the pterygoid plate, from the inferior margin of the zygomatic bone. The surgical wound comprised an open wound. Screws were attached to the healthy alveolar bone and a protection plate to the affected side of the zygomatic arch by means of a suspension wire. The operation
time was 2 hr 40 min; blood loss was 900 ml. Four units of packed RBC were infused due to postoperative anemia. Based on pathological findings from a sample obtained intraoperatively, well-differentiated squamous cell carcinoma was determined. No invasion of the vessels or lymph ducts was observed; the excised stump also tested negative (Fig. 3).

Antibiotics were promptly administered at 14 days postoperatively due to discharge of pus from the wound, resulting in a quick cessation. Level II, 40-mm internal heterogeneous lymphadenopathy was observed at 34 days on postoperative CT images (Fig. 4). No recurrence was observed in the maxillary gingiva (Fig. 5). A blood test revealed signs of inflammation (Table 1). Bilateral cervical lymph node metastasis was diagnosed. No infiltration shadow in the upper lungs was observed on a chest X-ray. Left side neck dissection was performed first.

The patient had shown signs of bradycardia

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**Fig. 2** Preoperative CT image (axial section)
a: Tumor of maxillary gingiva, b: No swelling of cervical lymph nodes.

**Fig. 3** Squamous cell carcinoma (H-E staining)
A: ×1.25 showing carcinoma squamous epithelial cells invading connective tissue stroma.
B: ×4 showing epithelial pearl formation
preoperatively. Sick sinus syndrome was diagnosed by a cardiovascular specialist based on the results of an electrocardiogram and a temporary pacemaker subsequently implanted. Left side radical neck dissection was performed under general anesthesia. The operation time was 5 hr 21 min; blood loss was 376 ml. Histopathological examination of the lymph nodes revealed no malignancy at Levels I–V. Substantial granulation tissue accompanying fibrillization was observed in the lymph nodes (Fig. 6). Consequently, right side neck dissection was postponed and reduction confirmed at 1 yr postoperatively by CT imaging (Fig. 7).

**Discussion**

In the present case, no localized infection of the reconstructed area was observed at approximately 4 weeks after maxillary neoplastic excision and progress appeared favorable. However, bilateral swelling of the cervical lymph nodes to 40 mm was observed on postoperative imaging. In terms of differential diagnosis, postoperative swelling of the cervical lymph nodes may represent lymph node metastases from a carcinoma of the maxillary gingiva; subacute regional lymphadenitis (cat-scratch disease)\(^1\); subacute necrotizing lymphadenitis\(^7\); viral lymphadenitis\(^8\); tuberculous lymphadenitis\(^9\); malignant lymphoma\(^10\); or some other form of cervical lymph node metastasis\(^1\).

Cat-scratch disease is a zoonotic disease
involving the transmission of the Gram-negative bacterium *Bartonella henselae*. In the present case, the patient did not travel or take any overnight trips postoperatively. No symptoms such as pain were reported and cat-scratch disease was ruled out.

The characteristics of subacute necrotizing lymphadenitis include swelling of the cervical lymph nodes, accompanied by a 38°C fever and tenderness. A reduction in white blood cells and an increase in AST and ALT are observed on blood tests. None of these symptoms was observed in the present case (reduction in white blood cells; increase in AST, ALT), however, so subacute necrotizing lymphadenitis was ruled out.

Viral lymphadenitis is an acute febrile disease accompanied by swelling of the cervical lymph nodes, fever, tonsillitis, and repeated occurrence. Caused by infection with the Epstein-Barr virus or Cytomegalovirus, it is often accompanied by an increase in atypical lymphocytes and impaired liver function. In the present case, however, no fever, increase in atypical lymphocytes, or impaired liver function was observed, so viral lymphadenitis was also ruled out.

Tubercular cervical adenitis leads to the outbreak and spread of pulmonary tuberculosis, the pathogen of which is an obligate aerobe, *Mycobacterium tuberculosis*. Here, however, no infiltration shadow was observed in the lung apex on chest X-ray, so tuberculous lymphadenitis was also ruled out.

Malignant lymphoma is recognized by swelling of the lymph nodes in the neck, armpit, and groin regions. General conditions include B symptoms: fever, weight loss, and night sweats. A definitive diagnosis is determined by lymph node biopsy. The range of tumor infiltration is confirmed by imaging and bone marrow examination.

Outbreak of cervical lymph node metasta-
sis after oral carcinoma occurs within 1 yr after primary treatment in severe cases. Positivity for metastasis is determined by a lymph node length diameter exceeding 11 mm or a diameter greater than 10 mm on images. Metastasis is also considered in cases where swelling is recognized in 3 or more areas of the lymph nodes. Typically, the form and reactivity of the lymph nodes is elliptical or flat, whereas metastasized lymph nodes are spherical. In the present case, the lymph nodes exceeded 40 mm and were spherical, with other lymph nodes of length diameter exceeding 11 mm. Therefore, cervical lymph node metastasis from the upper jaw gingival carcinoma was suspected.

The clinical symptoms observed in the present case eliminated the possibility of subacute regional lymphadenitis (cat-scratch disease), subacute necrotizing lymphadenitis, viral lymphadenitis, or tuberculous lymphadenitis, leading us to consider malignant lymphoma and postoperative metastasis from carcinoma of the maxillary gingiva. Therefore, neck dissection and pathological examination of the lymph nodes were performed. The results of histopathological examination revealed no malignancy of the cervical lymph nodes, leading us to diagnose non-specific swelling of the cervical lymph nodes. The maxillary sinus was an open wound, so chronic inflammation was also a possibility.

To our knowledge, no studies to date have reported postoperative swelling of the cervical lymph nodes for carcinoma where there was no metastatic involvement, as in the present case. Here, cervical lymph node metastasis was suspected based on the size of the lymph nodes in the CT images. The results of imaging, including by CT, MRI, and PET-CT, led us to another conclusion.

References


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