Clinical diagnosis and treatment for oral cancer

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1: Introduction
Oral cancer constitutes of 3 to 5% of all cancer and accounts for approximately 80,000 deaths each year in the whole world. The early detection of oral cancer is possible and significantly reduces the mortality. The advantage of early detection is shown by 70% survival rate of patient who don't have nodal involvement. This is in marked contrast to the 30 percent 5 years survival rate of patients who have cervical lymph nodal metastasis. Hence, it is apparent that the familiarity with oral cancer is particularly important for dentists and oral surgeons to detect the oral cancer in its early stages.

2: Symptoms of oral cancer
Most cancers of oral cavity are squamous cell carcinoma (S. C. C.), which constitutes approximately 90% of all oral cancer. These cancers are found in the upper or lower gingiva, the lateral margin of the tongue, the buccal mucosa, the floor of the mouth, the lower lip, and the retromolar trigone. These cancers may be quite harmless in appearance if detected in the early stage. The appearance of an early S. C. C. may be like as a desquamated lesion which is often concerned with a benign keratosis. Generally, common symptoms of the oral S. C. C. are the mass without pain, the haphalgesia for food, drink or dental prosthesis, the bleeding, and the ulcer formation. According to its advancement, the oral carcinoma will appear as a large ulcer with friable tissue that bleeds easily. If the carcinoma closes to the bone tissue, bone resorption may be found by radiographic examination. These lesion must be distinguished from the trauma such as that caused by a non-fitting denture, a mistake of biting, or a laceration by sharp objects. The most important clinical point in cancer screening is the course that a traumatic ulcer is expected to heal within a week after the causative stimulus has been removed. If the denture is suspected of causing the stimulation to mucosa, it can be either repaired or not worn. The patient should be examined within a week to decide whether the suspected lesion has cured. If the anticipated healing has not occurred, a biopsy should be done to make a definitive diagnosis. Oral S. C. C. appears as a papillomatous lesion, as a granulomatous lesion, as an ulcer, or as a deeply invasive lesion. The latter type of lesion is rare, and has a high malignant potential and a poor prognosis. Usually, the ulcerative type grows more rapidly and forms a raised induration at the margin of the lesion.

The TNM staging system is applied to an oral cancer as well as other cancers in whole body. Cervical metastasis should be suspected in all stages of oral cancer, because the incidence of cevical lymph node metastasis is 10 to 20% in the early cancer of T1. Moreover, incidences of lymph node involvement for T2 and for T3 and T4 are 25 to 30% and 50 to 70% respectively. Cervical metastasis is generally thought to be a reliable prognostic factor for an oral cancer. The submandibular, submental, and jugular nodes are a common site of primary metastasis.
3: Oral cancer in various areas of the mouth

a. Carcinoma of the tongue (Fig. 1-A.)

The tongue is a common site of oral S. C. C. This cancer usually arises as a swelled mass or as a small ulcer and gradually invades a deep region, resulting in the tongue losing its normal mobility. The patient notices the difficulty for speaking or swallowing according to the tumor development.

b. Carcinoma of the gingiva (Fig. 1-B.)

The gingival cancer tends to involve jaw bone at a relatively early stage. This type of cancer may be painful and often caused bleeding during tooth-brushing. If the tumor localized around the existing tooth, the mobility or lose of tooth is sometimes observed according to the tumor advancement. Lesions localized in the upper gingiva may involve submandibular and upper jugular lymph nodes, and the lower gingiva carcinoma may involve submental, submandibular, and upper or middle jugular lymph nodes.

c. Carcinoma of the floor of mouth (Fig. 1-C.)

The floor of mouth is a small area beneath and anterior to the tongue. This area may often be the common site of the oral cancer. The early cancer lesion of this area may be symptomless and is detected as an small erosive, papillary, or ulcerative lesion. But cancers at this site tend to invade the adjacent structures widely, and many patients finally have a medical examination when the cancer became advanced stage. Therefore the prognosis is poor comparing with the cancer of other site, and the incidence of cervical metastasis, to submental, submandibular, and jugular lymph nodes, is very high. It is thought that approximately 65% of patient suffered cervical metastasis when first examined.

d. Carcinoma of the buccal mucosa (Fig. 1-D.)

The mucosa is the most common site for oral cancer in the Indian subcontinent, this cause is thought to be the widespread habit of betel- and tabaco-chewing. It is easy for the buccal mucosa to often suffer the injury from tooth or denture. Leukoplakia lesions located in this area are often transformed into the carcinoma. The early lesion is painless and may form a white or speckle patch or an indurated mass or ulcer. According to the its enlargement, the tumor tends to make ulcer formation. Submandibular lymph nodes are involved if the lesion metastasizes.

4: treatment

Surgical excision is the most effective to treatment for oral cancer excluding a small tumor that has the high radiosensitivity (Fig. 2-A, B). The disappearance of the tumor can be expected by the irradiation more than 40 Gy in the tumor size of T1or T2. In a advanced tumor, it is not few to use the radiation and chemotherapy together with the surgical operation to reduce the maxillofacial dysfunction of mastication, articulation, and deglutition. When the jaw-bone suffered wide defect by the tumor excision, it is necessary to reconstruct the jawbone with titanium tray and iliac bone (Fig. 3-A, B, C, D). Moreover, neck dissection is indispensable together with primary tumor resection if there is a servical lymph node metastasis. As the wide range of excision, primary wound closure becomes difficult, and reconstruction of oral cavity using various local flap, pedicled cutaneous flap, or free flap is needed for avoiding infection and retaining the oral function (Fig. 4-A, B). Tongue flap, palatal flap and buccal

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Fig. 2. Typical mandibular marginal resection.
A: Carcinoma of anterior lower gingiva, showing the invasion into mandibular bone.
B: The upper half of the mandible was excised together with surrounding intact tissue.

Fig. 3. Reconstruction of mandibular bone.
A: Resected osteosarcoma in right side of the mandible.
B: Titanium mandibular tray mounting the iliac bone.
C: Adaptation of these segment for surgical defect.
D: Postoperative image showing ideal arch formation of mandible.

Fig. 4. Reconstruction using pedicled cutaneous flap.
A: Incision line for recurrent carcinoma of the buccal mucosa extending cheek skin.
B: Defect of the cheek skin and mucosa were reconstructed with pedicled latissimus dorsi muscle flap.

Fig. 5. Surgery after the neoadjuvant chemotherapy for maxillary carcinoma.
A: Nodular carcinoma in the hard palate causing teeth deflection.
B: Local finding after chemotherapy (Nedaplatin-260mg, Docetaxel-220mg), showing a complete response.
C: Wide resection was performed according to the localization of the carcinoma before chemotherapy. But cancer cells were pathologically detected in the surgical specimen.

Fig. 6. Combination therapy by irradiation and chemotherapy.
A: Advanced maxillary carcinoma with deep ulcer formation.
B: External irradiation (total 66Gy) was performed at the same time as administration of anticancer drug (Carboplatin-720mg, Peploymycin-60mg). The catheterization via superficial temporal artery was done in order to selectively administer into the left maxillary artery.
C: Local finding after this combination therapy showing a complete response. In this cases, patient refused a following operation regrettably, and careful follow-up has been done in our department.

The chemotherapy has been used in oral cancer for palliation and in a curative role. But certain tumors have been found to respond well to chemotherapy and in the management of these it is an accepted part of total treatment. It is generally recognized that any effect which may have on these tumors is strictly temporary. It has also not been shown conclusively that the adding of chemotherapy to an existing regime has reduced the extent of surgery required and the incidence of local recurrence or distant metastasis, and has altered prognosis as a result. In our department, anti-cancer drug is
often used together with the operation (Fig. 5-A, B, C.). Though the tumor mass often disappears in the naked eye only by pre-operative chemotherapy, a radical operation is indispensable even to such situation because the case who remains the tumor tissue histologically is not a little (Fig. 6-A, B, C.).

5: Summary
A lot of oral cancer is clinically generated in association with premalignant lesion, such as leukoplakia, erythroplakia, or refractory ulcer. If the oral symptom of pain, bleeding, or swelling does not improve by drug and removal of local stimulus within two weeks, we should doubt the existence of the malignant tumor and perform the biopsy from lesion. In oral and maxillofacial area where the cancer can be directly observed and palpated, it is possible enough to detect the malignancy at the early stage, and to diagnose for stating of radical treatment.

6: References