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Case report

Role of supportive periodontal management in patient with metastatic cancer

Kevin Chee Pheng Neo^{1,3}, Nurul Syahirah Mohamad^{2,3}, Avita Rath³, Melissa Li Zheng Wong³, Myint Wai³, Bennete Fernandes³

¹Klinik Pergigian Tawau, Ministry of Health, Sabah, Malaysia

²Klinik Pergigian Bandar Tun Razak, Ministry of Health, Pahang, Malaysia

³Faculty of Dentistry, SEdi University, Selangor, Malaysia

ABSTRACT

Background: Treatment of head and neck cancers may cause sequelae affecting patients' quality of life during and after treatment. As a result, periodontal management of a patient with parotid gland adenoid cystic carcinoma, particularly in advanced stage 4, can be challenging for dental practitioners, especially if the patient is on active oral molecular therapy and undergoing long-term radiotherapy and chemotherapy. **Purpose:** This report was intended to describe the conservative non-surgical management of tooth 27 with poor prognosis owing to grade II mobility in a patient on active Lenvatinib therapy – where the extraction was not advisable to lessen the risk of osteonecrosis. **Case:** A 52-year-old female patient was referred by an oncologist to our dental clinic for non-carious toothache. Five years ago, the patient was diagnosed with adenoid cystic carcinoma (ACC) and had a treatment history of radiotherapy, chemotherapy and surgical removal of the left parotid gland to manage the malignancy. Oral examination revealed characteristic findings of periodontitis. **Case Management:** Ultrasonic scaling, antimicrobial mouth rinses and reinforcement in oral hygiene instructions manage the tooth 27 conservatively. **Conclusion:** A cautious approach by the dental surgeon, together with the multidisciplinary team caring for cancer patients, is fundamental and helps with the palliative periodontal management of this patient to enhance oral health-related quality of life. With a lack of reports on conservative periodontal therapy in ACC patients, this report highlights the combination of smoking cessation, reinforcement of oral hygiene instructions and conservative periodontal treatment.

Keywords: adenoid cystic carcinoma; periodontitis; periodontal maintenance therapy; periodontal management

Correspondence: Dr. Kevin Chee Pheng Neo, Klinik Pergigian Tawau, Ministry of Health. Klinik Pergigian Tawau, Klinik Kesihatan 2, Jalan Chong Thien Vun, Jalan Sin On, 91008 Tawau, Sabah, Malaysia. Email: kevincpneo@gmail.com

INTRODUCTION

Oral cancer can be mistakenly diagnosed as periodontitis, particularly when the patient's signs and symptoms present localised periodontitis or acute periodontal infections such as a periodontal or periapical abscess. Neoplasms such as oral squamous cell carcinoma (OSCC), odontogenic tumours, other primary neoplasms of periodontal tissue and secondary metastatic neoplasms of periodontal tissue have a moderate association with the destruction of periodontal tissue, thus causing progressive loss of the alveolar bone and subsequently, mobility of teeth.¹

However, little information on salivary gland neoplasm can be obtained, particularly adenoid cystic carcinoma (ACC) and its relationship with periodontitis. ACC is a

rare malignant neoplasm of the salivary gland in the head and neck malignancies, with a prevalence of 10% among salivary gland disorders.^{2–4} It commonly affects women at the average age of 50 years and occurs in the parotid glands, minor salivary glands and, rarely, in the buccal mucosa.^{3,5} Clinically, ACC presents as an indolent and slow-growing lesion.^{3,6–8} It is locally invasive and can invade peripheral nerves and blood vessels at an early stage. Around 40% of ACC cases have the potential to metastasise to other distant organs.^{3,4,7–9} Its high propensity for perineural invasion affects the trigeminal and facial nerves of the patient.³ Risk of distant metastasis is influenced by the difficulty of surgical removal at the primary site and stages of the ACC.¹⁰

Treatment modalities for ACC can range from conservative to radical surgical removal followed by

radiotherapy, chemotherapy or molecular therapy.^{3,4,9,10} However, these treatment modalities do not improve the prognosis of the disease due to its metastasis ability and responsiveness to treatment, especially the chemotherapeutic agents due to their low sensitivity and responsiveness toward ACC.^{3,11} Oral molecular drugs such as Lenvatinib (molecule anti-angiogenic drug) are used for the treatment of ACC and have a low risk of causing osteonecrosis of the jaw (ONJ). However, when combined with other antiresorptive drugs, such as bisphosphonate, these may increase ONJ incidents.¹² Moreover, previous literature reports the occurrence of oral molecule medications and could act as a trigger for the occurrence of medications-related MRONJ.¹³ Hence, the main clinical objective is to relieve the patient's pain and prevent tooth loss, as extraction is not advisable during this period as the patient is at risk of ONJ. This case report was intended to describe the conservative non-surgical management of tooth 27 with poor prognosis owing to grade II mobility in a patient – on active Lenvatinib therapy – where extraction was contraindicated to ameliorate the risk of osteonecrosis.

CASE

An oncologist referred a 52-year-old female patient due to localised pain concerning tooth 26. Her primary complaint was localised pain on tooth 26 and difficulty in eating and swallowing in the last three weeks before visiting our dental clinic. It was described as non-radiating, chronic and dull pain in the region of tooth 26. The patient's medical history revealed Stage 4 metastatic ACC involving the left parotid gland since 2017. Previously, the patient had undergone radiotherapy until June 2020, including chemotherapy during the last cycle of oral-targeted therapy in the middle of 2019. Currently, she is on the second cycle of oral targeted therapy with Lenvatinib for her cancer. The patient

had been smoking since the age of 16, with an average of 25 cigarettes per day (45 packs per year). The patient also admitted to drinking alcohol occasionally.

The patient visited a general dental practitioner three weeks prior, and the dentist suggested root canal treatment at the dental specialist clinic to relieve the pain. Upon clinical examination, the patient presented with an asymmetrical face and left-side facial paralysis during centric relation, as shown in Figure 1. The facial paralysis was due to surgical removal of ACC, which includes the complete removal of the left parotid gland. In addition, tooth 26 showed poor periodontal status with Miller grade II mobility indicated for extraction.

Further examination of the patient using an orthopantomogram (OPG) is shown in Figure 2, revealing that the patient has trismus, as shown in Figure 3. The OPG revealed that the bone level of tooth 26 was at the middle third of the root. Generalised horizontal bone loss can be observed in both upper and lower jaws, with localised



Figure 1. The inability of the patient to close the left eyelid due to facial paralysis.



Figure 2. The orthopantomogram (OPG) of the patient.



Figure 3. The mandibular arch and the maximum mouth opening of the patient.

vertical bone loss seen in relation to tooth 35 and tooth 46. The patient was diagnosed with periodontitis as a manifestation of systemic disease.

CASE MANAGEMENT

Following a clinical and radiographic examination, the patient was prescribed paracetamol 500 mg (PRN), chlorhexidine and saline mouth rinse for two weeks, and she was referred back to her oncologist to acquire a clearance letter for the necessary dental procedures. After two weeks, the patient visited with a letter from her oncologist urging that we pursue conservative management options. However, if tooth extraction is inevitable, the oncologist advised withholding her oral Lenvatinib medication a week before the surgery to avoid osteonecrosis.

Full mouth ultrasonic scaling was carried out, and the patient was referred to the oral surgery department for extraction of tooth 26. An oral maxillofacial surgeon educated the patient and guardian before extraction regarding the post-extraction complications when the patient is on oral Lenvatinib. The oral maxillofacial surgeon recommended that the patient be handled conservatively for another week, such as rinsing with chlorhexidine mouthwash and saline mouth rinse to relieve the non-carious pain. An extensive oral hygiene education was given to enhance the patient's existing gingival health. During a follow-up phone call, the patient reported improved pain control after using chlorhexidine mouthwash and saline mouth rinse in conjunction with the reinforced oral hygiene instructions.

DISCUSSION

While oral cancer, such as OSCC, has been intensively investigated for its relationship with periodontitis, ACC has received less attention due to its rarity, accounting for just 1% of all head and neck cancers.¹⁴ Many studies reported

intraosseous ACC mimicking apical periodontitis,^{15–17} but no results associating ACC to periodontitis were discovered. The patient had both metastatic ACC and typical periodontitis symptoms. The clinical characteristics are consistent with periodontitis, but for this patient to be diagnosed with a systemic illness affecting the periodontium, a biopsy and histological testing were required to determine if the radiolucency is of metastatic or inflammatory origin.¹ Since a biopsy was not performed, this posed a challenge for comprehensive management.

The benefits of conservative management include the patient's ability to retain their teeth for mastication, enhancing their quality of life. It also aids in the prevention of extraction, which is contraindicated in our case. Extraction may cause the patient to develop ONJ due to the medication, whereas Lenvatinib makes future care more complex. However, the disadvantages of this management include that it only gives short relief to the patient if the patient maintains good dental hygiene. The periodontitis and tooth discomfort will return if the patient does not cooperate. The patient also needed to be evaluated regularly to monitor and manage the condition closely. Resultantly, in light of the diagnostic inadequacies, periodontal management was carried out as conservatively as feasible to avoid difficulties for the patient.

In the present study, irradiated patients' preferred periodontal treatment includes scaling and root planing with antimicrobial therapy.¹⁸ Increased incidence of opportunistic pathogens after radiotherapy to the head and neck region – with or without chemotherapy – renders plaque control extremely vital to prevent disease progression and periodontal pocket colonisation in cancer patients.^{17,19} Additionally, meticulous oral hygiene instruction should be given to the patient, emphasising avoiding alcohol consumption and smoking.²⁰ Patients should be instructed on the proper tooth brushing technique, preferably the modified Bass technique, and interdental cleaning using floss or an interdental brush.^{18,21} The usage of mouthwash containing chlorhexidine and fluoride is encouraged to reduce the side effects of radiotherapy by preventing a decrease in the tensile strength of irradiated dentin and enamel.²²

Periodontal maintenance is crucial in determining the outcome of the periodontal treatment and long-term care of teeth.²³ Tooth loss rate for patient with high periodontitis risk is significantly higher than low-risk patients.²⁴ In this case, the patient is under the high-risk category due to ACC and smoking habits.^{23,25} It is important to start tobacco cessation programmes for the patient to achieve a better outcome of the periodontal disease and reduce the risk of tooth loss during the maintenance period.^{23,26} Studies showed that smokers respond less than non-smokers to non-surgical periodontal therapies in terms of healing and clinical parameters.^{27,28} Chlorhexidine mouthwash effectively improves plaque and gingival index among cancer patients as an oral hygiene regimen before and during cancer treatment.²⁹

Using anti-angiogenic agents such as Lenvatinib causes side effects such as dry mouth and fatigue.⁶ Dry mouth increases the risk of caries in patients. Patients with high caries risk require good oral hygiene maintenance to prevent tooth decay and further management. Certain patients without motivation to maintain oral hygiene might choose to extract the tooth when it is decaying or mobile. This action might further complicate the medical condition of patients with the occurrence of ONJ – common among patients under cancer therapy that opted for dental extraction. The coincidence of ONJ among patients under Lenvatinib is significantly low, but the risk of ONJ is still present as dental extraction acts as a common risk for the occurrence of ONJ.¹² Hence, we must consider the balance between risk and reward when such a scenario occurs.

To summarise, periodontal care of ACC patients throughout the cancer therapy phase may be challenging. A cautious approach by the dental surgeon, together with the multidisciplinary team caring for cancer patients, is fundamental and helps with the palliative periodontal management of this patient to enhance oral health-related quality of life. Due to the lack of reports on conservative periodontal therapy in ACC patients, the current case report highlights the combination of smoking cessation and reinforcement of oral hygiene instructions in addition to conservative periodontal treatment.

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