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Short communication

Huge ameloblastic carcinoma of the mandible with metastases treated in several different ways

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Abstract

Ameloblastic carcinoma is an extremely rare, aggressive, malignant tumour that is most common in the mandible. Because of its rarity there is no general approach to treatment. We present a rare case of an ameloblastic carcinoma with multiple metastases in a 63-year-old Japanese man that was treated in several different ways, including chemoradiotherapy and immunotherapy.

Keywords: ameloblastic carcinoma; secondary type; immunotherapy; chemoradiotherapy; multiple metastases; immune checkpoint inhibitor

Introduction

Ameloblastic carcinoma was previously classified as "primary" and "secondary", the "secondary" variant being one that arose from a pre-existing benign ameloblastoma.[1] However, it has now been simplified as a single entity.[2] It is the malignant transformation of an ameloblastoma[3] and occurs in about 1%–3% of all odontogenic tumours,[4,5] and there is no standard approach to treatment because the condition is so rare. We present a case of ameloblastic carcinoma with multiple metastases, which was treated in several different ways including chemoradiotherapy and immunotherapy.

Case report

A 62-year-old man was referred to our department from another hospital with a huge, painless mass that extended from the temporal to the submandibular region, and occupied half his face. He had a history of segmental resection with a 10 mm margin and plate reconstruction for ameloblastoma in the left side of the mandible at the hospital five years previously. According to his wishes he had not been given any postoperative adjuvant treatment and was followed up for two years, but stopped attending after that. Half of his left mandible was missing on a panoramic radiograph, but the reconstruction plate was intact (Fig. 1). A biopsy from a mass in the oral cavity gave a diagnosis of ameloblastic carcinoma (Fig. 2).

Contrast-enhanced computed tomography (CT) showed a huge mass lesion invading the sphenoidal sinus and part of the cranial base, with multiple metastases in both lungs, the mediastinum, the liver, and a kidney. The tumour was high intensity on T2-weighted magnetic resonance imaging in the same region as the CT (Fig. 3). On 18F-fluorodeoxyglucose positron emission tomography there were abnormal accumulations in the whole body. Transbronchial biopsy of the upper lobe of the right lung and needle biopsy of focal lesions of the liver were diagnosed as metastases of ameloblastic carcinoma.

We planned concurrent chemoradiotherapy with high-dose cisplatin because resection of such an advanced local tumour accompanied by multiple metastases was

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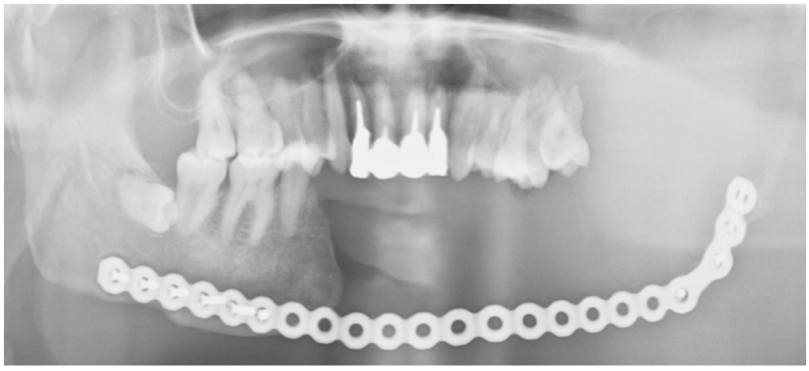

Fig. 1. Orthopantomograph showing the defect in the left mandible.

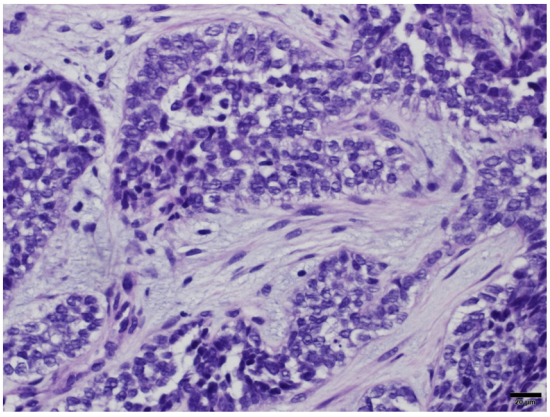

Fig. 2. The specimen from the oral cavity shows irregular spindle-shaped or oval cells with cellular atypia in a palisade arrangement and clear nucleolus (haematoxylin and eosin, original magnification × 400).

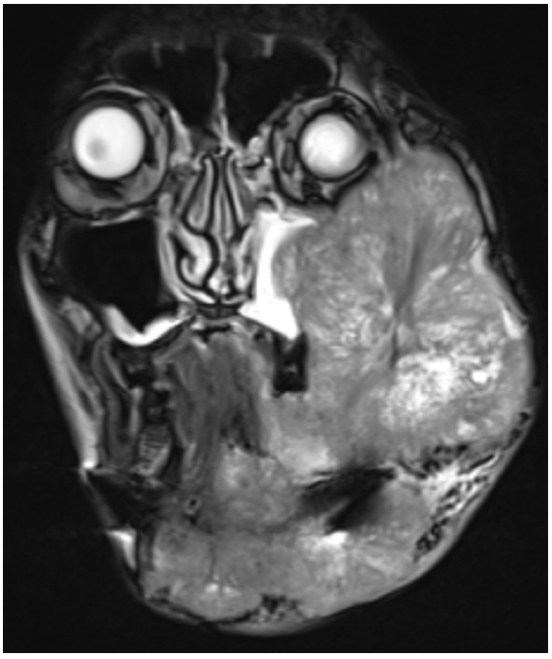

Fig. 3. T2-weighted magnetic resonance image showing the high intensity tumour invading the sphenoidal sinus and part of the cranial base.

impossible. The patient had only one cycle of cisplatin (80 mg/m^2) together with radiation limited to the head region (55 Gy) because he had severe fatigue. After that, nivolumab was given as the second treatment after the tumour was found to be resistant to cisplatin.

He was given 3 mg/kg intravenously every two weeks for a total of eight doses, with no serious complications. After eight doses of immunotherapy, CT evaluation of the overall tumour burden with measurable disease showed an increase of only 3.5% compared with the pretreatment CT evaluation and was judged as stable disease based on the revised RECIST guidelines.[6] However, we could not continue the nivolumab because he could not afford the expense. He died of respiratory insufficiency as a result of progressive disease 15 months later.

Discussion

Ameloblastic carcinoma is an extremely rare odontogenic tumour that originates from the dental enamel or odontogenic epithelium, and shows the histological picture of ameloblastoma with cytological atypia with or without metastases.[1,4] Little is known about its epidemiology and general approach because of its rarity. Giridhar et al reported that the secondary type represented 15 of 199 cases published in English from 1950–2016.[7] The present case was a rare secondary type that arose after resection of an ameloblastoma.

Resection is the first choice of treatment. Datta et al[8] recommended en bloc removal of the mandible or maxilla, with 1–2 cm of normal bone as a margin because such resections, particularly in the maxilla, have a high recurrence rate. Radiotherapy is given mainly to patients with invaded or close surgical margins, piecemeal excision of the tumour, perineural infiltration, or invasion of soft tissue.[7,9] Atkinson et al recommended adjuvant radiation of 30–50 Gy to improve local control.[10] However, the improvement shown after adjuvant radiotherapy was not significant in a study of five-year, progression-free survival.[7]

The role of chemotherapy is not clear. Previous papers have described the use of cisplatin, adriamycin, cyclophos-

phamide, and methotrexate in patients with systemic metastases because the tumour is epithelial.[8] We know of no reports of the use of nivolumab before the present case. This suggests, therefore, that nivolumab does not induce an obvious reduction of overall tumour burden, but it is possible that several treatments might suppress the growth of the tumour. However, further case reports and clinical studies are required to establish an optimal treatment for ameloblastic carcinoma.

Conflict of interest

We have no conflicts of interest.

Ethics statement/confirmation of patient's permission

Neither of these was necessary.

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