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Case reports

Jaw malignancies: signs that should alert the dentist

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Abstract – Malignant lesions of the jaw-bones may mimic odontogenic infections and other disease conditions in the oral cavity in presentation, leading to late diagnosis by the unwary clinician. The purpose of this paper is to illustrate clinical features and radiographic appearance that should make the dentist thinking in a diagnosis of a malignant tumour of the jaw. The authors present 3 cases of malignancies in the jawbones and discuss the diagnostic lessons from each one.

In dental practice malignant tumours of the jawbones are challenging to diagnose because the dentist is not familiar with its manifestations. Misdiagnosis of a malignant lesion as benign one or as an infective disease may delay the diagnosis and the treatment witch will increase the mortality, worsen the prognosis and explain the morbidity associated with the treatment of the large lesions. In fact, malignancies should be considered in the differential diagnosis of inflammatory and reactive lesions that are common to the oral region.

Several signs may lead to the discovery of the disease such as pain, numbness, swelling, mobility of teeth, toothache, paresthesia of the mental nerve... (Table I). When swelling, odontogenic pain or tooth mobility is present without signs of infection or traumatism, a neoplastic origin should be ruled out.

Case 1

A thirty nine year-old woman was referred to the unit of the oral medicine and oral surgery for the management of a swelling that had occurred two months after a dental extraction that did not heal. According to the referral, she initially had an odontalgia and a mobility of the first maxillary molar without dental decay or periodontal disease.

After the dental extraction, the swelling had rapidly increased twice in volume. At the extraoral examination, the patient had a facial asymmetry (Fig. 1), and the skin overlying of the swelling was normal in colour and texture. But upon palpation, we note a slight paresthesia of the infraorbtary area and there was no involvement of the cervicofacial lymphatic chain. Intraoral examination showed a non healing of the socket twenty day after dental extraction. It could be noticed that the swelling was extended from the canine region until the tuberosity and it streped over the vestibular and palatal sides (Fig. 2). The overlying mucosa was inflamed. A radiographic exam was ordered encompassing a panoramic (Fig. 3) and a Blondeau radiographies (Fig. 4): they showed a radiolucent lesion of the left maxillary region with poorly defined borders and floating teeth. The CT scan demonstrate clearly the osteolytic lesion of tissular density witch erode the alveolar ridge, the palate, the homolateral maxillary sinus floor and extent until the pterygomaxillary region (Fig. 5).

Fig. 1. Patient with a facial asymmetry.

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Table I. Clinical and radiographic findings (+ found, - not found).

	Case 1	Case 2	Case 3
Swelling	+	+	+
Pain	-	-	+
Lymphatic nodes involvement	-	-	+
Sensitive troubles (anaesthesia, paraesthesia, dysaesthesia)	+	-	+
Fast growth	+	+	+
Toothache	+	-	+
Tooth mobility	+	-	+
Non healing socket after tooth extraction	+	-	-
Limitation of mouth opening	-	+	-
Ill defined borders	+	+	+
Sun-ray spicules	-	-	+
Widening of periodontal ligament space	-	-	+

Fig. 2. Endobuccal view showing the swelling of the alveolar ridge.

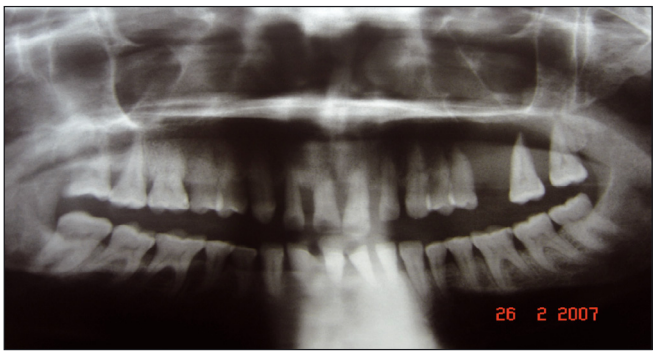

Fig. 3. Panoramic radiograph: osteolytic lesion with floating teeth in the left maxillary region.

An incisional biopsy was performed and the specimen obtained was submitted for histopathological examination witch confirm the clinicoradiological suspicion of malignancy, it was a B-cell lymphoma. The rest of the investigations showed no other location of the pathology, the patient had chemotherapy with complete regression of the lesion (Fig. 6).

Fig. 4. Blondeau radiography: osteolytic lesion with ill defined borders.

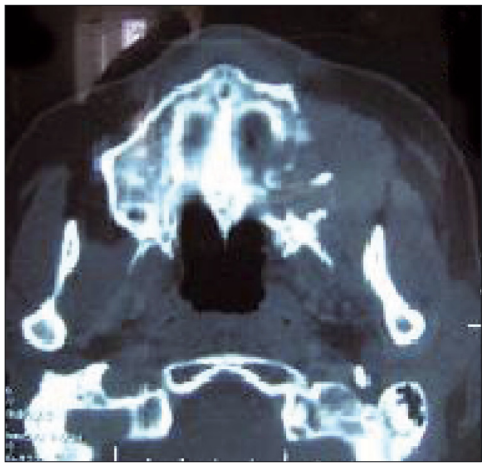

Fig. 5. CT scan: osteolytic lesion of tissular density.

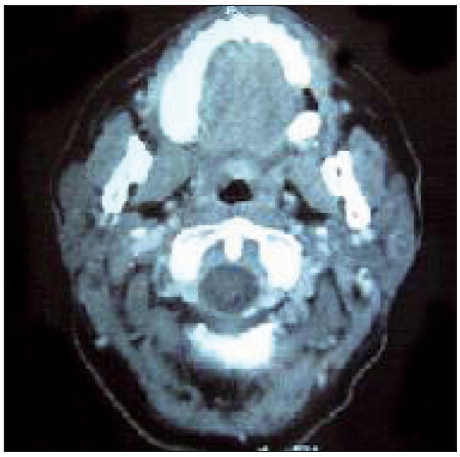

Fig. 6. CT scan after chemotherapy: note the regression of the lesion.

Fig. 7. Swelling of the left hemi-face extended to the cervical region.

Case 2

A twenty two year-old man presented in January 2007 with a 2-month history of painless swelling of the left hemi-face (Fig. 7), accompanied by progressive limitation of the mouth opening at 1.5 cm. The extraoral examination disclosed a firm swelling that is fixed into superficial and deep tissue. There was no enlargement of the cervical lymph nodes. Intraoral examination showed an ulcerative swelling that bled easily with no dental or periodontal abnormalities (Fig. 8). A panoramic radiography (Fig. 9) showed a large osteolytic process with ill defined borders that involved the mandibular branch, the condyle, the coronoide and an enlargement of the mandibular canal. The CT scan demonstrated a large lesion of the infratemporal loge, the maxillary sinus, the mandible, the parapharyngeal region and the pterygoid bone. Associated with this lesion, there are some areas of hypocaptation of the contrast material, suggesting necrosis (Fig. 10). The patient was then referred to a maxillofacial surgery service where he underwent a biopsy witch concluded the diagnosis of a synovialosarcoma.

Fig. 8. Endobuccal view showing an ulcerative lesion.

Fig. 9. Panoramic radiography: a large radiolucent lesion with ill defined borders. Note the enlargement of the mandibular canal.

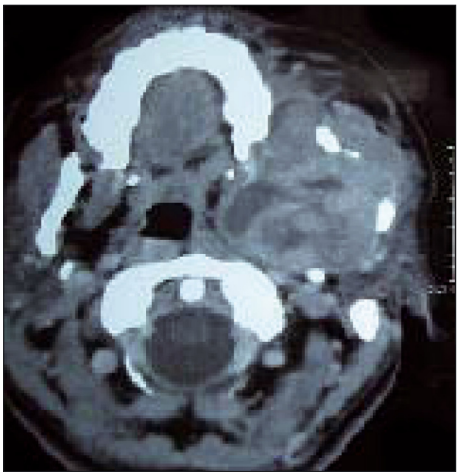

Fig. 10. CT scan: a large osteolytic lesion involving several anatomic regions. Note the areas of hypocaptation of the contrast material, suggesting necrosis.

Fig. 11. An intraoral radiography: note the regular widening of the periodontal space.

Fig. 13. CT scan before the biopsy showed a well limited lesion that expands the vestibule.

Fig. 12. Panoramic radiography: uniform widening of the periodontal ligament involving 5 teeth. Note also the abnormalities in the bone trabeculation at the periapex.

Fig. 14. CT scan after the biopsy, revealed an expansive lesion with a periosteal reaction in the shape of "sun-rays" spicules.

Case 3

A twenty one year-old man was sent to our consultation for the management of a paroxystic toothache, without evident dental origin, accompanied by paresthesia in the left mandibular trigeminal branch distribution territory.

The patient had a radiation therapy in his childhood for a retinoblastoma and since he was blind. At the extraoral examination, there was a slight facial asymmetry and enlargement of the cervical lymph chain. Intraoral examination showed a painful swelling of the horizontal branch of the left mandible that encloses the first mandibular molar. It had hard consistency and measured $2 \times 2 \times 1.5$ cm. The overlying mucosa was slightly inflamed. However the surrounding mucosa was normal. The periodontal was healthy and all the teeth were decay free. An intraoral (Fig. 11) and a panoramic radiographies (Fig. 12) was taken, they showed a uniform widening of the periodontal ligament involving 5 teeth, extended from the canine until the second molar. There were also abnormalities in the bone trabeculation at the periapex of these teeth that are clinically and radiographically healthy. The CT scan disclosed a well limited lesion that expands into the vestibule (Fig. 13). The biopsy concluded to the presence of an inflammatory disease without signs of malignancies despite the clinical suspicion mentioned by the surgeon. One week after the biopsy, the swelling had a very fast progression; it tripled in size with evident facial asymmetry and a numbness of the left lower lip. The lesion was growing fast, but there were no changes in the general status of the patient. The enhanced CT scan of the face revealed an expansive lesion that involved the floor of the mouth and the vestibule with a periosteal reaction in the shape of "sun-rays" spicules (Fig. 14). The second biopsy, under general anaesthesia, proved that it was an osteosarcoma.

Discussion

Some 99% of malignant lesions of the oral cavity raised from oral mucosa and the jawbones, the remaining 1% are the result of metastasis from primary tumours located elsewhere in the body [1]. Both primitive and metastatic lesions can occur in the soft tissue or in the jaw. Clinical features and radiographic findings that suspect malignant lesions are very heterogeneous. Dental practionner should search these signs through the interrogation, clinical examination and radiographies. Some preexisting etiologic conditions can lead to the development of malignant tumour, such as underlying bone disorder or previous exposure to cervicofacial radiation [2]; it was the state of our third observation. The delay between radiation therapy and the development of the osteosarcoma was of 15 years. One of best parameters of a good prognosis in the malignancies is an early diagnosis, it was the case of the first observation, the lesion had totally regressed under chemotherapy and there were no metastasis at the moment of the diagnosis.

A malignant tumour may mimic a benign one at least initially [3], that was the case of the third observation, a non ulcerated swelling. However the paresthesia of the lower lip described by the patient made to highly suspect a malignant neoplasm origin that invade the mandibular canal, a benign neoplasm classically displace the nerve and do not cause sensitive troubles [4]. It was also the same thing in our first case, the patient had an anaesthesia of the infraorbitary area, that makes one think that the lesion had invade or compress the infraorbitary nerve. In the third observation, after the biopsy, the course of the lesion had rapidly changed, it increased twice in size in few days. The fast growth of the lesion found the three cases, and it was a very important sign in favour of malignancy [2]. Painful swelling and associated toothache without evident dental cause are likely in favour of malignancies, benign lesions are rarely painful [4]. In fact in the tree observations the patients had a very good dental state; there were no periodontal inflammatory disease and no dental decay. Tooth mobility was found in tow observations and, in each case, there was no evident reason for it, before avulsing teeth, a radiography is very indispensable in order to avoid a bad surprise.

A rapid limitation of the mouth opening associated with a swelling that grow fastly without signs of infection, and witch did not regress under medical treatment is a warning that it is probably a malignant lesion [5], it was the case of the second observation, the limitation of the mouth opening at 1.5 cm was caused by the rapid invasion of the masticator muscles by the tumour.

Radiographic appearances of a bone lesion must be perfectly analysed. Several parameters can be suspectfull of malignancy. At the standard radiographs, the diffuse bone destruction with poorly defined margins of the malignant tumours contrast with the well defined borders of the benign lesions, especially in the cysts where the limit is sclerotic [6]. The first and the second observations emphasise the importance of the examination of the integrity of the lesion's borders. It is important to know that even a cyst or a cystic like lesion with ragged margins is suspected to be malignant until contrary proof. The sun-ray trabecular pattern at the periphery of a lesion is a pathognomonic sign of malignancy [6, 8]. It was found in our third observation. Generalised and regular widening of the periodontal ligament space around one or more teeth, without periodontal inflammatory disease, is an early sign of malignancy before the bone modification could be observed at the radiography [7]. As a specialist in examination of the denture, the dentist do not have the right to misobserve this important and early sign. In a study made by Nokayama et al. [7], all patients suffering of osteosarcoma of the jawbones showed a widening of the periodontal ligament space of the teeth. It was the case of the third observation and it was effectively an osteosarcoma. In the three cases, there was absence of roots resorption, however benign lesion showed classically this sign, witch testify its long evolution and the time put to devour both bone and dental roots [4]. In fact, in malignant tumours, the absence of roots resumption testifies of its very fast progression [9].

Conclusion

In view of similarity in presentation of malignant lesions of the jawbones and others odontogenic and non odontogenic tumors and even infections of dental origin, a careful examination and a high index of clinical suspicion is advocated to ensure early multidisciplinary care of the patient.

Defining the degree of malignant potential is very helpful. Althouth clinical examination and imagining will not provide a specific diagnosis, it should help narrow the differential diagnosis with benign lesions and thereby helping to guide the patient treatment.

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