

Oral Manifestations of Squamous Cell
Carcinoma of Maxillary SinusCobo-Vazquez C^{1*}, Molinero-Mourelle P¹, Garcia-Morcote CA², Martínez JM¹ and J Lopez-Quiles J¹¹Department of Medicine and Oral Surgery, School of Dentistry, Universidad Complutense de Madrid, Spain²Service of Pathological Anatomy. 12 de Octubre University Hospital, Spain

Article Information

Received date: Sep 23, 2016

Accepted date: Nov 09, 2016

Published date: Nov 15, 2016

*Corresponding authors

Cobo-Vazquez C, Department of Medicine and Oral Surgery, School of Dentistry, Universidad Complutense de Madrid, Pza. Ramón y Cajal, 3, 28040, Madrid, Spain, Email: carloscobov@hotmail.com

Distributed under Creative Commons CC-BY 4.0

Keywords Squamous cell carcinoma; Maxillary sinus; Extraction; intraoral

Article DOI 10.36876/smd.1008

Abstract

The present article describes the evolution of a squamous cell carcinoma of the maxillary sinus that produced as its first clinical appearance intraoral signs and symptoms. The patient had visited her primary dentist due to advanced mobility of the upper left second molar. Following its extraction, the signs and symptoms of a malignant lesion appeared. A review of the literature is presented following this case. The objective of this article is to describe the intraoral signs and symptoms of squamous cell carcinomas of the maxillary sinus, for their early diagnosis and treatment to improve their prognosis.

Background

The maxilla can be affected by malignant tumours originated from the oral cavity or the paranasal sinuses [1]. Carcinomas of the paranasal sinuses are rare, representing 0,8% of all cancers, and between 3-5% of malignant tumours of the head and neck region, being the maxillary sinus the most frequent origin of primary malignant tumours of the paranasal sinuses [2], corresponding to 25 to 60 % of all cases [3]. The incidence of paranasal sinus carcinomas is less than 10/1.000.000 in men, and 5/1.000.000 in women [4], therefore affecting more men (1.6-2.0: 1; M: W) from 50 to 70 years of age [5].

More than 75% of paranasal sinus cancers have an epithelial histology [4], where the squamous cell carcinoma is the most frequent histological type, present in half of all diagnosed patients [1]. They are generally detected in an advanced state, in 90% of all cases at stages T3/T4 when adjacent structures are already implied [3,6], given the absence of specific symptoms [3,5] due to their development in the interior of spaces such as the maxillary sinus.

The physiological volume of the maxillary sinus varies between 25mL and 15mL in men and women respectively, favoring tumour growth and its invasion of nearby structures such as the eye, the optical nerve, the cavernous sinus or the brain [5,7].

The 5-year survival rate of this type of tumours is 15-30% and the recurrence rate following treatment is 25-35%, occurring more frequently during the first year [3].

There are numerous risk factors that may trigger paranasal sinus cancer, especially those associated with some occupation exposures such as wood dust (forestry industry, sawmills, carpentry, woodwork, cellulose and paper industry), the leather industry, nickel compounds, and acids used in the production of isopropyl alcohol. The association between these cancers and the exposure to formaldehyde, dust derived from the textile industry and chromium-derived compounds have also been suggested, although the evidence is limited. Tobacco consumption has also been linked to a higher risk of developing this type of tumours [4].

Furthermore, its association with the Human Papilloma Virus (HPV) has also been mentioned [8], observing a prevalence of HPV in 30% of squamous cell carcinomas [4].

This case report describes a squamous cell carcinoma of the maxillary sinus that developed intraorally following a tooth extraction.

Case Presentation

A 68-year-old woman visited the Service of Oral Surgery and Implantology of the Department of Medicine and Orofacial Surgery of the Faculty of Dentistry of the Complutense University of Madrid, on the 21st of November 2013, due to pain, inflammation and a lack of cicatrisation following the extraction of the upper left second molar, that had been performed 3 weeks earlier. The patient had a medical history of hypercholesterolemia, treated with Simvastatin 10mg, as the only information of relevance.

The patient had visited her primary dentist due to advanced mobility of the upper left second

OPEN ACCESS

ISSN: 2575-7776

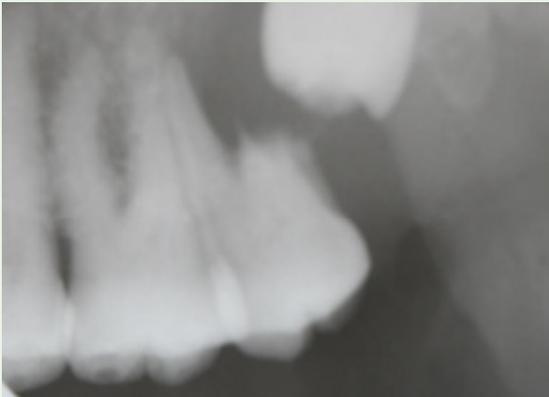


Figure 1: Root resorption of the upper left second molar.

molar, free of pain. Radiographically, a radiolucent image around the mentioned molar and root resorption were observed, which appeared to originate from the upper left third molar (Figure 1). The tooth was extracted, followed by copious bleeding controlled by local haemostasis.

Intraoral examination at our Service revealed a tumour lesion, which extended from the first molar up to the maxillary tuberosity, occupying half of the left hemipalate and the corresponding buccal area, with an ulcerated aspect, everted margins and necrotic tissue (Figure 2). The patient mentioned the appearance of the lesion following the extraction of the molar, emphasizing its aggressiveness and rapid growth.

Due to the aspect of the lesion and its evolution, diagnostic imaging was conducted with the use of panoramic radiographs and CBCT, as well as an incisional biopsy under local anaesthesia using a cold knife procedure for histopathological evaluation. Haemostasis was obtained by suturing, where a friable consistency of the tissues was observed, as well as copious bleeding.

The following visit was scheduled for four days afterwards, on waiting histopathological reports (Figure 3). During that period of time, the patient suffered from an episode of haemorrhage during mastication due to the contact of the opposing teeth, which was



Figure 2: Intraoral image of the tumour, where an ulcerated mass with necrotic tissue can be observed.



Figure 3: Appearance of the tumour four days following the incisional biopsy.

controlled with Amchafibrin-500 mg. When the patient returned for the mentioned recall visit, increased growth of the lesion was observed.

Two weeks afterwards, the histopathological report was received, confirming the diagnosis of a squamous cell carcinoma of the maxillary sinus. In the following study where a CT and a Positron Emission Tomography (PET) were performed, a lesion was identified, which occupied the left maxillary sinus, as well as the complete destruction of its walls. It had also laterally spreaded to the left pterygomaxillary fissure, and in its central aspect, it invaded the left choana, without interfering the nasal septum. Caudally, it affected the maxilla and the alveolar process. Its approximate dimensions were of 5x4, 3x3, 8 cm, presenting clear pathological metabolism. At a laterocervical aspect, numerous metabolically pathological adenopathies were observed, the most significant of which was of 1,2cm along its major axis.

The final diagnosis was a squamous cell carcinoma of the maxillary sinus, staged at cT4N2bM0 (Figure 4).

Ten days afterwards, intravenous iron was administered due to anaemia, possibly from the continuous contact of the lesion with the opposing teeth, which caused self-limited bleeding of the lesion.

25 days after the first visit to our Service, she underwent induction chemotherapy (TPF: Docetaxel, Cisplatin, Fluorouracil) at the Service

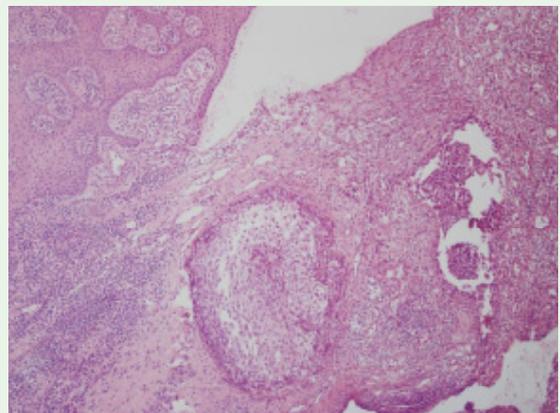


Figure 4: Histopathological analysis of the tumour.



Figure 5: Appearance of the tumour one month following the start of chemotherapy. The ulcerated mass and necrotic tissue has disappeared and the patient refers an improvement of the symptoms of the lesion.

of Oncological Medicine at the 12 de Octubre Hospital of Madrid. During this treatment phase, granulocyte colony-stimulating factor and prophylactic ciprofloxacin were administered during a period of 5 days. The patient only mentioned an increase in salivation that was white in color, which produced her nausea.

One month afterwards, she returned to our Service for a recall visit, where she was instructed in oral hygiene techniques and was advised to maintain good oral hydration during radiotherapy (Figure 5). Class-III mobility of the upper first left maxillary molar was observed; however, following recommendations from the Service of Oncological Medicine, its extraction was not performed.

8 days afterwards, the patient commenced chemo-radiotherapy at a dosis of 70 Gy and Cisplatin on the tumour and lymph nodes, which was substituted by Carboplatin due to a bilateral neurosensorial high frequency hypoacusis. During the chemo-radiotherapy, the patient also presented cutaneous erythema, grade-II cervical radiodermatitis, dysgeusia, conciliation insomnia, grade-I asthenia, grade-III oral mucositis, lingual ulcers, acute irruptive pain, oral candida and xerostomy.

Six months after the start of oncological treatment, the patient was surgically intervened with the purpose of eliminating the whole tumour.

Conclusions

The initial symptoms of paranasal sinus malignancies are usually unspecific and frequently associated with inflammatory alterations. Patients normally refer breathing difficulties or lack of ventilation, rhinorrhoea or nasal congestion. The presence of trismus, headache, proptosis or cranial neuropathy implies the possibility of extra-sinusal extension of the lesion. In the case of dull pain, superimposed infection or extra-sinusal extension are usually the causes, while acute pain in the trigeminal nerve territory points more towards perineural spread [3].

As mentioned in this clinical report, the presence of masses in the posterior area of the hard palate, as well as radiolucent images around a maxillary molar, imply the need of establishing differential diagnosis between a periodontal or odontogenic infection, benign or malign neoplasm of the salivary glands, or a soft tissue tumour [9].

On occasions, deep visceral pain, such as the perceived in the sinusal mucosa, may trigger central sensitization able to produce secondary hyperalgesia, referred pain and alterations in the autonomous nervous system. Therefore, on certain instances it can be masked as pulpal or periodontal pain [10,11]. Due to an incorrect diagnosis, the involved teeth may be erroneously treated or extracted, highlighting the role of the professional recalling the ability of a maxillary sinus lesion in producing dental pain [11]. In all patients, a comprehensive examination of the oral cavity is crucial, evaluating the presence of masses in the hard or soft palate, cheek, upper buccal sulcus, and mobility of the maxillary teeth, which could be due to the existence of a malign tumour of the paranasal sinuses [12].

In the present clinical case, the final diagnosis of the neoplastic process was established by a histopathological analysis of an incisional biopsy of the lesion. Biopsy continues to be the gold standard in the diagnosis of this type of lesions; however, other types of tests, such as intraoral washing cytology, have also been proven as effective diagnostic methods [6].

Imaging tests prior to the surgical intervention determine the possibility of resection and improve surgical access in order to reduce intra and postoperative complications. They are also of vital importance in differentiating inflammatory from neoplastic processes. The most indicated systems are Computed Tomography (CT) and Magnetic Resonance Imaging (MRI). CT is frequently the first requested study, providing a correct bone assessment. Radiographic findings on a CT that should lead to suspicion of a neoplasm are: unilateral sinus disorders, osseous erosion, soft tissue necrosis, lymph node enlargement or soft tissue hyperplasia. Osseous erosion occurs in 80% of sinonasal carcinomas, much more frequently than in other tumours such as lymphomas, sarcomas or metastasis. In the present case, all the walls of the maxillary sinus, the maxilla and the alveolar process were destroyed, exhibiting the aggressive behavior of the tumour. Signs of osseous sclerosis are rare in malignant lesions, if present, they are usually indicative of reactive osteitis secondary to chronic sinus inflammation. Calcification of paranasal sinus carcinomas is rare [3]. Ill-defined lesions, with infiltrating margins, are indicative signs of malignant growth [9].

If a malignant lesion is suspected, MRI or Positron Emission Tomography (PET) must be requested, as they delimit the extension of the tumour, as well as the involvement of adjacent tissues [3,4,13].

Malignant tumours of the maxillary sinus typically drain to submandibular lymph nodes, therefore, in the case of metastasis; they are usually located at this area, as well as the high jugular chain lymph nodes. Lymphadenopathy occurs in approximately 15% of patients and is often associated with a poor prognosis [3].

In this case, the patient had numerous metabolically positive lymph nodes, showing the advanced state of the disease.

Malignant tumours of the paranasal sinuses are both rare and aggressive, explaining the lack of consensus in their management. Current treatment strategies are supported by retrospective studies, being the most standardized options surgery combined with radiotherapy [14,15]. Surgery usually implies maxillectomy, with or without orbital exenteration, producing important aesthetic alterations; on the other hand, if the extent of the lesion reaches the base of the skull or the nasopharynx, surgical possibilities diminishes

[3]. Therefore, where surgical resection is limited by the size of a tumour, chemotherapy prior to surgery is considered a good option [1].

In this case report, the aggressiveness of the tumour is demonstrated by the speed with which the signs and symptoms appeared following the extraction, as well as the invasion of neighboring structures evidenced in the diagnostic tests, showing an involvement of posterior and higher structures, such as the pterygomaxillary fissure. Posterior and higher are a simply poorer surgical access and view, and present higher recurrence rates [16]. Therefore, in this case, combined radiotherapy and chemotherapy prior to surgery was undertaken.

The presence of renal cell carcinomas must be discarded by CT and immune-staining, as they are the most common type of metastasis of sinus carcinomas [9].

The prognosis of these tumours is dependent on the age of the patient, the stage of the lesion at diagnosis, its histology, and location, where tumours affecting the sphenoid sinus are those associated with a significantly lower probability of mortality within 5 years of diagnosis compared to the frontal or maxillary sinus [4].

Acknowledgements

Assistance with the study: We would like to thank Alexandra Helm (Universidad Complutense de Madrid) for her assistance in this study.

References

1. Sakashita T, Homma A, Hatakeyama H, Kano S, Mizumachi T, Furusawa J, et al. Salvage operations for patients with persistent or recurrent cancer of the maxillary sinus after super selective intra-arterial infusion of cisplatin with concurrent radiotherapy. *Br J Oral Maxillofac Surg*. 2014; 52: 323-328.
2. Kreppel M, Danscheid S, Scheer M, Lüers JC, Eich HT, Zöller JE, et al. Neoadjuvant chemoradiation in squamous cell carcinoma of the maxillary sinus: a 26-year experience. *Chemother Res Pract*. 2012.
3. Mossa-Basha M, Blitz AM. Imaging of the paranasal sinuses. *SeminRoentgenol*. 2013; 48: 14-34.
4. Youlden DR, Cramb SM, Peters S, Porceddu SV, Møller H, Fritschi L, et al. International comparisons of the incidence and mortality of sinonasal cancer. *Cancer Epidemiol*. 2013; 37: 770-779.
5. Vulpe H, Giuliani M, Goldstein D, Perez-Ordóñez B, Dawson LA, Hope A. Long term control of a maxillary sinus mucoepidermoid carcinoma with low dose radiation therapy: a case report. *RadiatOncol*. 2013; 29: 251.
6. Nishimura Y, Hattori M, Ohbu M, Kobayashi M, Konishi H, Miyazaki H, et al. Utility of intraoral washing cytology as a diagnostic technique in maxillary sinus carcinoma with oral invasion. *Cytopathology*. 2013; 24: 67-69.
7. Bobinskas AM, Wiesenfeld D, Chandu A. Influence of the site of origin on the outcome of squamous cell carcinoma of the maxilla-oral versus sinus. *Int J Oral Maxillofac Surg*. 2014; 43: 137-141.
8. Rytönen AE, Hirvikoski PP, Salo TA. Lymphoepithelial carcinoma: two case reports and a systematic review of oral and sinonasal cases. *Head Neck Pathol*. 2011; 5: 327-334.
9. Marques KD, Andrade FR, Castro LA, Vêncio EF, Mendonça EF, Ribeiro-Rotta RF, et al. Slow-growing palatal mass: a challenging differential diagnosis. *J Oral Maxillofac Surg*. 2010; 68: 1884-1889.
10. Bornstein MM, von Arx T, Altermatt HJ. Loss of pulp sensitivity and pain as the first symptoms of a Ewing's sarcoma in the right maxillary sinus and alveolar process: report of a case. *J Endod*. 2008; 34: 1549-1553.
11. Kim SY, Yang SE. Inflammatory myofibroblastic tumor of the maxillary sinus related with pulp necrosis of maxillary teeth: case report. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod*. 2011; 112: 684-687.
12. Jégoux F, Métreau A, Louvel G, Bedfert C. Paranasal sinus cancer. *Eur Arch Otorhinolaryngol Head Neck Dis*. 2013; 130: 327-335.
13. Tauber S, Nerlich A, Lang S. MALT lymphoma of the paranasal sinuses and the hard palate: report of two cases and review of the literature. *Eur Arch Otorhinolaryngol*. 2006; 263: 19-22.
14. Kim WT, Nam J, Ki YK, Lee JH, Kim DH, Park D, et al. Neoadjuvant intra-arterial chemotherapy combined with radiotherapy and surgery in patients with advanced maxillary sinus cancer. *RadiatOncol J*. 2013; 31: 118-124.
15. Kang JH, Cho SH, Kim JP, Kang KM, Cho KS, Kim W, et al. Treatment outcomes between concurrent chemoradiotherapy and combination of surgery, radiotherapy, and/or chemotherapy in stage -III and -IV maxillary sinus cancer: multi-institutional retrospective analysis. *J Oral Maxillofac Surg*. 2012; 70: 1717-1723.
16. McMahon JD, Wong LS, Crowther J, Taylor WM, McManners J, Devine JC, et al. Patterns of local recurrence after primary resection of cancers that arise in the sinonasal region and the maxillary alveolus. *Br J Oral Maxillofac Surg*. 2013; 51:389-393.