Oral and Maxillofacial Surgery Cases 4 (2018) 180–183

Contents lists available at ScienceDirect

Oral and Maxillofacial Surgery Cases

journal homepage: www.oralandmaxillofacialsurgerycases.com

Odontogenic lesion mimicking squamous cell carcinoma: A new histological entity?

Giovanni Dell'Aversana Orabona [a], Giovanni Salzano [a], Ludovica Marcella Ponzo [a], Fabio Maglitto [a], Antonio Pansini [a,*], Mariarosaria Cervasio [b], Giorgio Iaconetta [c], Luigi Califano [a]

[a] Department of Maxillofacial Surgery, School of Medicine, University of Naples "Federico II", Naples, Italy
[b] Pathology Section, Department of Advanced Biomedical Sciences, School of Medicine, University of Naples "Federico II", Naples, Italy
[c] Department of Neurosurgery, School of Medicine, University of Salerno, Salerno, Italy

Introduction

The diagnosis of odontogenic tumors is often quite complicated due to the heterogeneity of the lesions, borderline forms, and hybrid forms. Usually, also the classification is somewhat controversial. Odontogenic tumors (OTs) include a group of heterogeneous diseases that range from hamartomatous or non-neoplastic tissue proliferations, to benign neoplasm, and to malignancy [1]. These lesions derive from epithelial, ecto-mesenchymal, and mesenchymal elements of the tooth forming apparatus. OTs are classified into 2 large groups: malignant OTs (MOT) and benign OTs (BOT) [1]. MOT are classified as carcinomas or sarcomas [2]. Odontogenic carcinomas include metastatic ameloblastoma (MA), primary or secondary ameloblastic carcinoma (AC), primary intra-osseous squamous cell carcinoma (PISCC), either arising de novo or from malignant transformation of a keratocystic odontogenic tumor (KOT), or other odontogenic cysts; clear cell odontogenic carcinoma (CCOC), and ghost cell odontogenic carcinoma (GCOC) [2].

Benign odontogenic tumors are divided in epithelial tumors, mixed tumors, and ecto-mesenchymal tumors [3]. To our knowledge, only few cases of combined or hybrid odontogenic tumors have been reported in literature [4–6]. The purpose of our study is to describe a case of a patient with an intraosseus lesion composed by two different components: a benign one, represented by an odontogenic squamous cell tumor, and a malignant, represented by a clear cells squamous cell carcinoma.

Case report

A 66-year-old male heavy smoker, was referred to Maxillofacial Surgery Department of the University of Naples "Federico II" in June 2016. The patient was suffering from severe obstructive pulmonary disease, HCV-related hepatopathy, and chronic hypertrophic cardiomyopathy. He presented swelling and pain on the left mandibular area, with a history of gradual increase in symptomatology during last 7 months. Family background was negative for this kind of lesion. Extra oral examination showed a 30 × 25 mm hard and painful mass involving the entire left mandible body, ulcerated in submandibular area. Clinical examination of the neck was negative. Intraoral exam revealed a poor oral hygiene with widespread periodontal disease and multiple residual roots. A bleeding and painful mucosal ulceration extended from left mandibular premolar region to ipsilateral tuber maxillae. Paresthesia and weakness of the lower lip were not reported. Clinically the lesion looked like a squamous cell carcinoma of the alveolar ridge (Fig. 1). An incisional biopsy was performed, resulting in a moderately differentiated squamous cell carcinoma (G2). Total body CT scan was then executed, revealing an expansive heteroplastic mass of the left mandibular body, measuring about 30 × 25 mm, and causing erosion both of the vestibular, and

* Corresponding author.
E-mail address: a.pansini86@gmail.com (A. Pansini).

https://doi.org/10.1016/j.omsc.2018.07.003
Received 5 March 2018; Received in revised form 21 June 2018; Accepted 16 July 2018
Available online 3 August 2018

the lingual cortical bone profile, furthermore infiltrating the mylohyoid muscle. No lymph nodal or distant metastases were highlighted. Basing on these exams, a left mandibulectomy extended to the ipsilateral tuber maxillae in association with a type III left radical modified neck dissection, was performed [7]. Due to the high operative risk, bone continuity was not restored and reconstruction was performed with a myocutaneous pectoralis major flap (Fig. 2). No complications were detected during the post-operative course and the patient was discharged from the hospital after 11 days. There was no evidence of recurrence at a 6-months follow-up.

Microscopic and immunohistochemical features

Microscopic evaluation of the surgical specimen showed an infiltrative tumor with prevailing invaginated growth pattern. The lesion consisted of some islands of well-differentiated squamous epithelium, irregular in size and shape, and amidst a dense fibrous connective tissue, numerous nests with central cystic degeneration containing keratin lamellae and coarse calcifications. The lining epithelium of the nests was both squamous which, partially, constituted by stellate cells. Immunohistochemical evaluation with cytokeratin 19 showed only a partial intralesional positivity while calretinin was negative (Fig. 3). Multifocal neoplastic infiltration was observed in the mandibular bone, instead all the lymph nodes and the salivary gland from lymphadenectomy were negative for tumor.

Histological interpretation was very difficult. Microscopic findings, while do not exclude the diagnosis of a well differentiated squamous cell carcinoma, on the other hand suggests, in the first instance, the hypothesis of an odontogenic neoplasia, including entities of both squamous odontogenic tumor and clear cell odontogenic carcinoma (Fig. 4).

Discussion

The surgical assessment of odontogenic tumors is still controversial and represents a great challenge for head and neck surgeons [24–26]. Clinical examination could guide the surgeon to choose an appropriate therapy protocol. Biopsy is the first tool to discover and clarify the nature of the lesion.

A persistent dilemma for pathologists and clinicians is to determinate the malignancy of the lesions. Traditionally, this evaluation is based on histopathological aspects such as size and nuclear irregularity, loss of polarity, mitotic index and neoplastic invasion. However, more practical and reliable methods are required.

Our sample showed a lesion type framed among odontogenic tumors. It combines histological features of an odontogenic neoplasia, including entities such as the squamous odontogenic tumor and clear cell odontogenic carcinoma mimicking a squamous cell carcinoma.

Squamous odontogenic tumor (SOT) is a benign, locally infiltrative lesion, that localize to the periodontium. Less than 50 cases have been reported since the first description of SOTs in 1975 [8]. Although the clear etiology of SOTs is unknown, these tumors are considered arising from the epithelial cell rests of Malassez. Clinically, SOT can be presented as an asymptomatic, slow growing, intraosseous lesion with few clinical signs and symptoms. Nevertheless, mobility and displacement of teeth, swelling of alveolar process, and mild to moderate pain are the main findings. Mandible is affected more often than maxilla, with a preferential occurrence in the posterior premolar and molar area [8].

SOTs is formed by well-differentiated squamous epithelial cells of different sizes and shapes, surrounded by mature connective tissue [9]. As result, this lesion is often described as a benign epithelial odontogenic tumor, acanthomatous ameloblastoma, acanthomatous ameloblastic fibroma or occasionally, well-differentiated squamosus cell carcinoma or pseudoepiteliomatous hyperplasia [10]. A histopathological misunderstanding may therefore lead to either therapeutic over- or under-treatment. The prognosis of SOT treatment is good. Recurrence appears to be rare, and may occur due to incomplete tumor removal [10].

Clear cell odontogenic carcinoma (CCOC) is a rare odontogenic tumor with female predilection occurring in the anterior part of the mandible with an incidence between 5th and 7th decade of life [11]. Clear cell odontogenic carcinoma was first described by Hansen et al., in 1985 as clear cell odontogenic tumor [12]. World Health Organization (WHO) in 2005 classified it as a malignant odontogenic tumor [13,14]. Clinical presentation of CCOC is a painless swelling in the mandible or maxilla [15]. Pain and loose teeth were the occasionally associated symptoms. Radiologically, the tumors were presented as ill-defined radiolucent lesions [16]. CCOC shows 3 different histological patterns: biphasic, monophasic, and ameloblastomatous [17]. Tumors with clear cell pattern in the head and neck region can impose serious problems with differential diagnosis. They may originate from different lesions including odontogenic tumors such as ameloblastoma, calcifying epithelial odontogenic tumor (CEOT), odontogenic carcinoma and salivary glands tumor, intraosseous melanocytic tumors, metastatic tumors from kidney, thyroid, prostate, and melanotic tumor [18,19]. This kind of lesions may be very well differentiated and involve alveolar bone, displaying microscopic evidence of malignancy. Similarly, bland islands of squamous

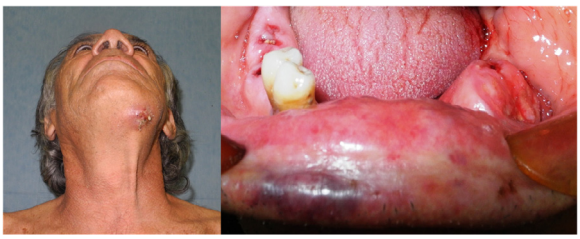

Fig. 1. Preoperative view.

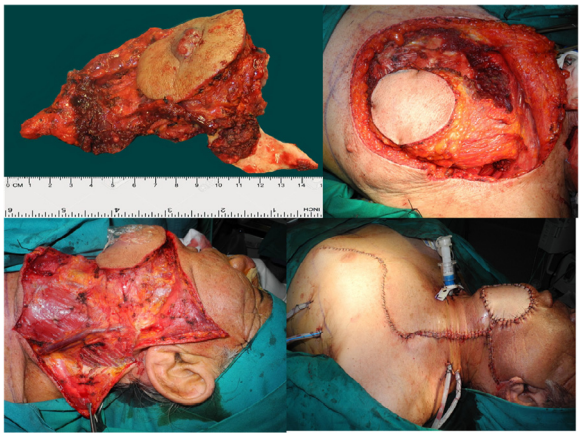

Fig. 2. Intraoperative view.

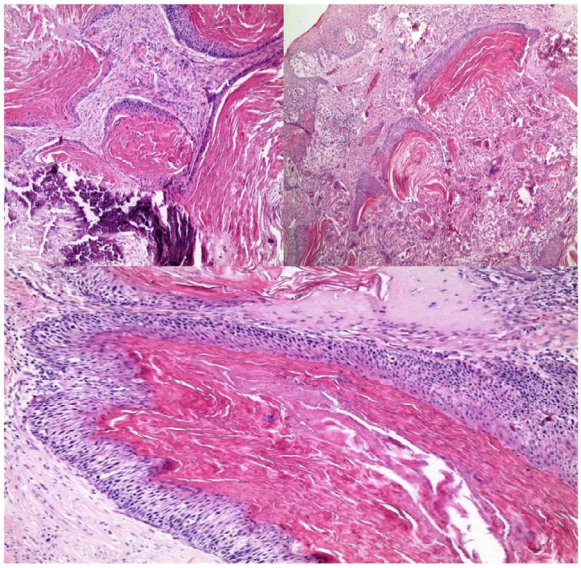

Fig. 3. Histopathological features.

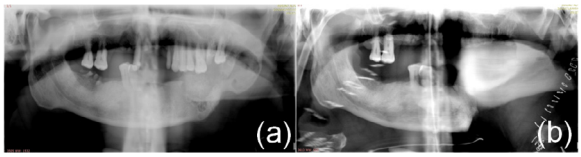

Fig. 4. (a) Pre-operative OPT; (b) post-operative OPT.

epithelium are not features of primary intraosseous/odontogenic carcinomas [20]. Like in the case we describe, in literature [21,23,27] a wide surgical resection with tumor-free margins, loco-regional control by lymph node resection and adjuvant radiation in cases with extensive soft tissue invasion is mandatory. Long-term follow-up is necessary to look for loco-regional recurrence and distant metastasis to lungs and bone even after appropriate therapy.

Conclusion

The odontogenic tumors are a group of extremely varied disorders that can represent a continuous spectrum of disease or several different all together. The final diagnosis can be made by histopathological evaluation; therefore, the treatment must be surgery, that appears to be curative for this kind of lesions. The aim of our study is to report our experience about a supposed new pathologic entity, as

well as having the characteristics of a hybrid odontogenic tumor mimicking the macroscopic and histologic characteristics of squamous cell carcinoma, creating further problems for the classification and the diagnostic and therapeutic approach. Our framework could be suggestive for a co-existence of two different odontogenic entities of which the malignant form is degenerated into squamous cell carcinoma. On the other hand, our sample may be suggestive also of a co-existence, from the beginning, of three different entities independently. In Sindhu and Namrata's and Ortiz et al.'s works [21,22], this kind of lesion reveals different microscopic patterns along with unusual association of squamous cell carcinoma, possibly suggestive of hybrid tumor. To assess this kind of lesions it is, after surgical resection, safe and important to advise diagnostic aids for the prediction of recurrence, so that radiotherapy can be given after surgery to avoid recurrence.

References

[1] Osterne RL, Brito RG, Alves AP, Cavalcante RB, Sousa FB. Odontogenic tumors: a 5-year retrospective study in a Brazilian population and analysis of 3406 cases reported in the literature. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2011 Apr;111(4):474–81.
[2] Martínez Martínez M, Mosqueda-Taylor A, Carlos R, Delgado-Azañero W, de Almeida OP. Malignant odontogenic tumors: a multicentric Latin American study of 25 cases. Oral Dis 2014 May;20(4):380–5.
[3] Wright JM, Odell EW, Speight PM, Takata T. Odontogenic tumors, WHO 2005: where do we go from here? Head Neck Pathol 2014 Dec;8(4):373–82.
[4] Reichart PA, Jundt G. Benign "mixed" odontogenic tumors. Patholoe 2008 May;29(3):189–98.
[5] Kumar P, Jayam C, Patil S, Zingade J. Mixed odontogenic tumour with dentinoid and ghost cells. BMJ Case Rep 2015. Dec 23 2015.
[6] Etit D, Uyaroglu MA, Erdogan N. Mixed odontogenic tumor: ameloblastoma and calcifying epithelial odontogenic tumor. Indian J Pathol Microbiol 2010;53(1):122–4.
[7] Kuś J, Osmólski A, Frenkiel Z, Kubiczek-Jagielska M. Classification of the neck dissections. Otolaryngol Pol 2000;54(Suppl 31):129–32.
[8] Mohr B, Winter J, Wahl G, Janska E. Recurrent squamous odontogenic tumor: a case report and review of the literature. Oncol Lett 2015 Nov;10(5):2713–22.
[9] Reichart PA, Philipsen HP. Squamous odontogenic tumor. J Oral Pathol Med 1990 May;19(5):226–8.
[10] Philipsen HP, Reichart PA. Squamous odontogenic tumor (SOT): a benign neoplasm of the periodontium. A review of 36 reported cases. J Clin Periodontol 1996 Oct;23(10):922–6.
[11] Prakash AR, Sairam V, Srinivas Reddy P. Clear cell odontogenic carcinoma-a rare case report. J Maxillofac Oral Surg 2015 Mar;14(Suppl 1):60–3.
[12] Hansen LS, Eversole LR, Green TL, Powell NB. Clear cell odontogenic tumor—a new histologic variant with aggressive potential. Head Neck Surg 1985 Nov-Dec;8(2):115–23.
[13] Bang G, Koppang HS, Hansen LS, Gilhuus-Moe O, Aksdal E, Persson PG, Lundgren J. Clear cell odontogenic carcinoma: report of three cases with pulmonary and lymph node metastases. J Oral Pathol Med 1989 Feb;18(2):113–8.
[14] Kumar M, Fasanmade A, Barrett AW, Mack G, Newman L, Hyde NC. Metastasising clear cell odontogenic carcinoma: a case report and review of the literature. Oral Oncol 2003 Feb;39(2):190–4.
[15] Ariyoshi Y, Shimahara M, Miyauchi M, Nikai H. Clear cell odontogenic carcinoma with ghost cells and inductive dentin formation - report of a case in the mandible. J Oral Pathol Med 2002 Mar;31(3):181–3.
[16] Nair MK, Burkes EJ, Chai-U-Dom O. Radiographic manifestation of clear cell odontogenic tumor. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2000 Feb;89(2):250–4.
[17] Maiorano E, Altini M, Viale G, Piattelli A, Favia G. Clear cell odontogenic carcinoma. Report of two cases and review of the literature. Am J Clin Pathol 2001 Jul;116(1):107–14.
[18] Dell'Aversana Orabona G, Salzano G, Iaconetta G, Piombino P, Ponzo L, Santella A, Astarita F, Solari D, Salzano FA, Califano L. Facial osteomas: fourteen cases and a review of literature. Eur Rev Med Pharmacol Sci 2015 May;19(10):1796–802.
[19] Avninder S, Rakheja D, Bhatnagar A. Clear cell odontogenic carcinoma: a diagnostic and therapeutic dilemma. World J Surg Oncol 2006 Dec 12;4:91.
[20] Squamous Odontogenic Tumor: literature Review Focusing on the Radiographic Features and Differential Diagnosis Nilson do Rosário Mardones, Thiago de Oliveira Gamba, Isadora Luana Flores, Solange Maria de Almeida and Sérgio Lúcio Pereira de Castro Lopes.
[21] Ganvir Sindhu M, Gajbhiye Namrata Yashwant. An unusual presentation of clear cell odontogenic carcinoma in mandibular anterior region. J Oral Maxillofac Pathol 2014:442–8. JOMFP 18.3 PMC. Web. 12 June 2018.
[22] Ortiz BH, Ailawadi M, Colitti C, Muto MG, Deavers M, Silva EG. Second primary or recurrence? Comparative patterns of p53 and K-ras mutations suggest that serous borderline ovarian tumors and subsequent serous carcinomas are unrelated tumors. Canc Res 2001;61:7264–7.
[23] Prevete N, Salzano FA, Rossi FW, Rivellese F, Dellepiane M, Guastini L, Mora R, Marone G, Salami A, De Paulis A. Role(s) of formyl-peptide receptors expressed in nasal epithelial cells. J Biol Regul Homeost Agents 2011 Oct-Dec;25(4):553–64.
[24] Orabona GD, Abbate V, Piombino P, Romano A, Schonauer F, Iaconetta G, Salzano G, Farina F, Califano L. Warthin's tumour: Aetiopathogenesis dilemma, ten years of our experience. J Craniomaxillofac Surg 2015 May;43(4):427–31.
[25] Dell'aversana Orabona G, Salzano G, Petrocelli M, Iaconetta G, Califano L. Reconstructive techniques of the parotid region. J Craniofac Surg 2014 May;25(3):998–1002.
[26] Dell'Aversana Orabona G, Salzano G, Abbate V, Piombino P, Astarita F, Iaconetta G, Califano L. Use of the SMAS flap for reconstruction of the parotid lodge. Acta Otorhinolaryngol Ital 2015 Dec;35(6):406–11.
[27] Salzano FA, Guastini L, Mora R, Dellepiane M, Salzano G, Santomauro V, Salami A. Nasal tactile sensitivity in elderly. Acta Otolaryngol 2010 Dec;130(12):1389–93.