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REVIEW ARTICLE

INTEREST OF THE SCANNER IN THE PRIZE IN CHARGE OF DIAGNOSIS OF MAXILLARY TUMORS IN BAMAKO

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ABSTRACT

Benign maxillofacial tumors are more common than malignant tumors. Primary or secondary malignant tumors are rare but very varied. In our country Mali, their discovery is always linked to the appearance of clinical signs such as swelling. If the definitive diagnosis is made by histological data, it is first assumed based on clinical and radiological information. The place of CT is fundamental in this diagnostic research and the aim of this work is to highlight its role. We will start from the description of TDM with its principle, its advantages, its disadvantages as well as the indications and also the description of the majority of the various benign and malignant maxillofacial tumors through 65 of the cases collected in our service in Bamako and review of the literature including 36 malignant tumors dominated by odontogenic cyst and 29 cases of malignant tumors with squamous cell carcinoma at the top

INTRODUCTION

Maxillofacial benign tumors are more frequent than malignant tumors, primary or secondary malignant tumors are rare but very varied. Their discovery may be related to the appearance of clinical signs or may be accidental during a routine radiological examination. If the definitive diagnosis is made by histological data, it is first assumed based on clinical and radiological information. The place of CT is fundamental in this diagnostic research and the aim of this work is to highlight its role. We will start from the d escription of TDM with its principle, its advantages, its disadvantages as well as the indications and the description of the majority of the various benign maxillofacial malignant tumors through 65 cases collected in our department in Bamako and review of the literature.

PATIENTS AND METHODS

Retrospective study compiled in the radiology department of the "Marie Curie" Medical Clinic and the Les Etoiles Clinic over a period of 20 months including 65 cases of malignant and benign maxillofacial tumors. Our patients benefited from the multibrart scanner with sectional reconstruction in the 3 spatial planes (axial, sagittal and coronal). The injection of iodinatedcontrast medium (PDC) was made in all patients at a rate of 1 ml / kg.

RESULTS

In our series, the female sex was dominant in all tumors (35 women / 30 men), the mean age was 45 years. Almost all of the patients clinically presented with mild or malignant facial swelling. In our country, tumors are uncovered at the most advanced stages, where management is difficult and the prognosis of patients involved in most cases. The benign tumor was dominated by ontogenic cysts (22 out of 36 cases) and the most common malignant tumor in our series was squamous cell carcinoma in 23 out of 29 cases) after odontogenic cyst, ameloblastoma and fibrous dysplasia. follows with a frequency of 5 cases and 3 cases. Among malignant tumors, the other cases of malignant tumors are (adenocarcinoma 5 cases and 1 case of metastasis). All malignant tumors have been histologically proven (Figures 1 and 2).The CT revealed cystic formations mainly mandibulo-maxillary and also at the level of the nasal cavities with teeth included. We also found osteolytic

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lesions with infiltration of the soft parts opposite and locoregional invasion mainly located in the jawbones in the majority of cases. But also there is a lot of mandibular lesion (Figures 3, 4, 5 and 6).

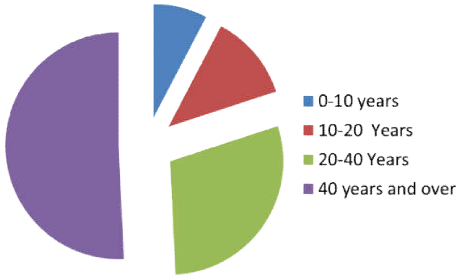
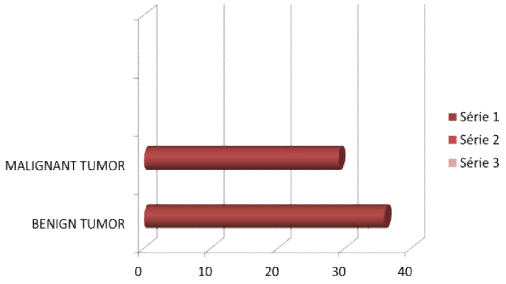


Figure 1: Distribution of patients by age group

Figure 2: Repair of patients by tumor type



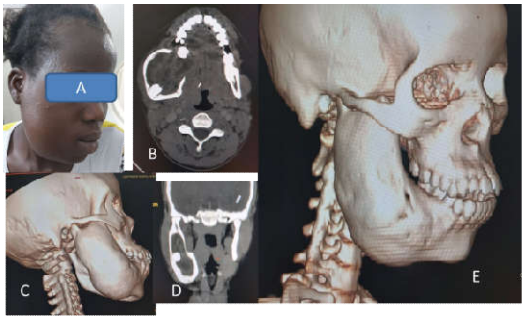


FIGURE 3: Mandibular cystic formation with an impacted tooth (odontogenic cyst)

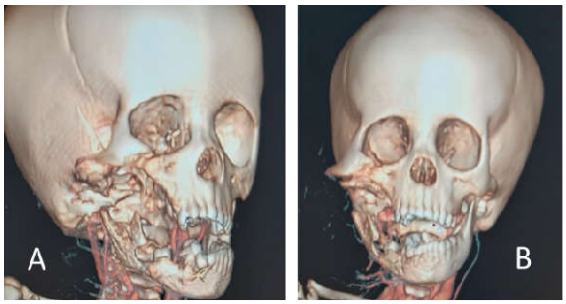


FIGURE 4: CT with 3D reconstruction showing an osteolytic mass of the right maxilla with involvement of the mandible (squamous cell carcinoma)

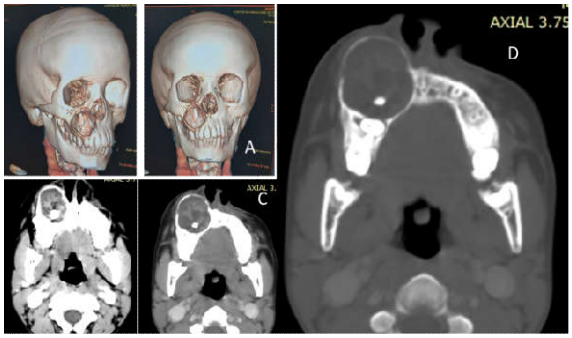


Figure5: (CT in axial reconstruction and 3D showing a rounded cystic osteolytic mass of the right upper jaw with inclusion of tooth (**Ameloblastoma)**

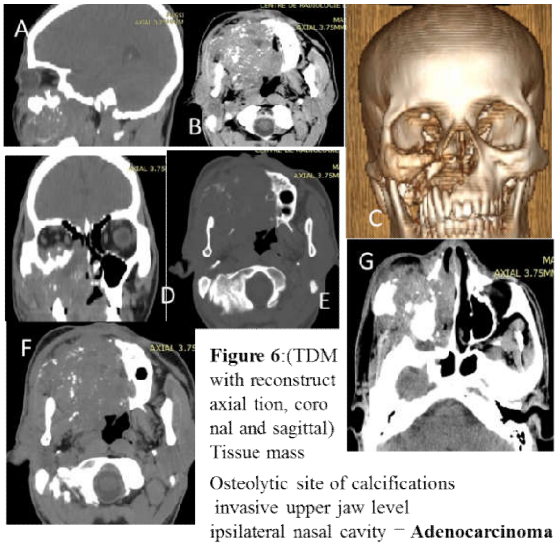


Figure 6:(TDM with reconstruct axial tion, coro nal and sagittal) Tissue mass

Osteolytic site of calcifications invasive upper jaw level ipsilateral nasal cavity – **Adenocarcinoma**

DISCUSSION

CT: Computed tomography (CT) or scanner makes it possible to acquire images most often millimeter. The performances of the latest generation devices allow very fast acquisitions, frontal and sagittal reconstructions and the production of dozens of images. At the tumor level, this examination allows an excellent evaluation of the bone structures as was the case in most of our tumors found in our series. Thus, it reveals the tumor mass and its topography, and specifies its degree of extension to neighboring regions. At the cervical level, the visualization of radiologically suspicious lymphadenopathy contributes to the classification of the lesion and thus weighs on the surgical indication [1,2]. The exploration of the soft parts is possible by injection of iodine [1, 2, 3, 4]

Advantages: A 3D reconstruction is one of the advantages of the scanner observed in our series (Fig 3 and Fig 4). It thus makes it possible to discriminate the superimposed anatomical elements. It is also able to provide the volume of the structure examined using the computer tool. This is widely used in implantology but also in dental stomatology, allowing to have a precise idea on the size and shape of a tumor.In addition, it has the Hounsfield scale which allows density measurements with a large precision. It allows through a very large fenestration to examine various structures, whether bone, fat or muscle, and with the intravenous injection of contrast media, vessels and hypervascularized areas. [5.6]. The CT scan has an accessible cost in Lamda compared to MRI, which is why there is still the

reference examination for the exploration of maxillofacial tumors.

The limitations*:* The CT scan remains an irradiating examination that is not indicated in some patients, such as pregnancy at the time of embryogenesis. Artefacts with metallic elements interfere with the examination. Variable spatial resolution is one of the weak points of CT [2,7].

Indications: CT provides diagnostic guidance for a malignant or benign maxillofacial tumor. It can take stock of local and regional extension. CT can also guide the biopsy for histological diagnosis, as well as therapeutic follow-up and post-treatment monitoring[2.7]

Benign Tumor And Pseudotumoral Pathology of The Maxilla*:* These so-called odontogenic tumors represent an important contingent of tumors of the jawbones. According to the more or less important development of their components, epithelial with or without induction of the underlying ectomesenchyme and / or formation of hard dental material, elsewhere mesenchymal and / or ectomesenchymal, they reproduce in a more or less accomplished way the stages of dental embryogenesis [8, 10]. The evolution of the classi fi cations of these tumors and the individualization of many of them in recent years demonstrates their complexity; their possible entanglement, their evolutivity, the individualization sometimes in various forms with varying prognoses underlines the importance of a permanent multidisciplinary confrontation [9, 11, 12]. The last classi fi cation associates benign bone lesions in this group (in particular those of a dysplastic nature and giant cell lesions). Their diagnosis is essentially based on a routine combination of standard images, CBCT and / or CT. MRI is rarely required in this area, apart from large, extensive lesions; recent studies, however, show interesting differential characteristics

Ameloblastoma and Ondogenic Cyst: Ameloblastoma, in its classic form combining solid and multicystic components. CT shows precise repression of thinned cortices, becoming virtual in large lesions. Dental displacements and especially rhizalysis are usual, evocative. The presence of an impacted tooth is very common. In this histological form, calcifications are absent. Careful attention is paid to small geodic lesions at a distance, a source of subsequent recurrences. In rare cases of transcortical infiltration into adjacent soft tissues. In the event of a maxillary seat, the posterior location, which is also preferential, exposes the risk of slow and low noise intrasinusal, or even intracranial, extension. First-line CT exams. In the most frequent follicle-cystic or plexiform histopathological forms, cystic areas with often voluminous fluid content and with a wall of variable thickness enhanced by the injection of contrast product, and tissue formations clearly enhanced by the contrast in a readily heterogeneous [9, 10, 13, 15]. Lesional associations, in particular with odontogenic cysts, are also possible, sometimes without radiological translation; however, the prognosis is then linked to the ameloblastoma, underlining the importance of an early anatomopathological diagnosis in front of any lesion of odontogenic cystic appearance [9, 10, 13, 14, 16]. ameloblastoma has a desmoplastic form. It differs from other forms by its site (maxillomandibular: 1/1, and anterior) and its appearance which in 50% of cases associates radiolucent and dense areas more suggestive of a lesion of a fibro-osseous nature [13].

Calcifying odontogenic epithelial tumor (Pindborg tumor): Much rarer than ameloblastoma (1% of all odontogenic tumors), not found in our series, on CT or especially on CBCT, their presence excluding a number of lesions, in particular. especially cystic. An impacted tooth (most often a third molar) is associated in more than half of the cases [9, 13]. Recurrence is not rare (10 to 15% of cases), requiring complete surgical excision and remote monitoring [8,17,18].

***Keratocystic odontogenic tumor*:** The keratocystic odontogenic tumor is the lesion traditionally called odontogenic keratocyst (or even primordial cyst), CT [8] show a very limited lesion, surrounded by a shell of variable thickness which can become virtual in lesions. very inflammatory, with cystic content, without noticeable contrast enhancement after contrast injection [8, 9, 19,21, 22, 23, 24]. The lesions are most often unique, more rarely bifocal.

Other Belignant tumors: (Ameloblastic fibroma and ameloblastic fibro-odontoma, Odontomas, dentigerous tumor with ghost cells, Odontogenic fibroma, Myxoma and odontogenic myxofibroma, Fibrous dysplasia Cemento-osseous dysplasia):These are benign tumors, quite rare but not negligible we did not find it in study. The CT is essential for the diagnostic workup and will specify a possible extension in the soft parts. Periosteal reactions are possible in large lesions [8, 9, 13, 25]. Remote monitoring is required due to the possibility of recurrence, but also the rare aggressive, multiple recurrence and invasive forms, although histologically benign. [8, 14, 26, 27, 28, 29, 30, 31, 32, 33 34, 35]. Treatment is based on multidisciplinary confrontation, and surgery is normally only considered for progressive and / or symptomatic forms [8, 36, 37, 42, 43].

Malignant Tumor Pathology*:* Malignant tumor pathology requires on the one hand a diagnostic workup, but above all an extension workup, which here is based on CT and often on MRI. With the development of endoscopic techniques in recent years, the histological diagnosis is often already known from the first examination. Of diverse histological type, the imaging technique must therefore be adapted to each pathology in order to assess as early as possible a remote extension, the best guarantee of the treatment and the distant prognosis of these pathologies which often remain formidable in these locations [8, 38, 39, 40, 41].

Squamous cell carcinoma: This is the most common malignant tumor of the facial mass; it mainly affects the maxillary sinuses and the nasal cavities. CT and MRI assess bone lyses which are often aggressive in the face of heterogeneous tissue mass and moderately enhanced by contrast. They focus on looking for lysis of the orbital floor, posterior extension towards the pterygopalatine fossa (very poor prognosis) and especially towards the base of the skull

Adenocarcinoma: Much rarer than squamous cell carcinoma, it represents nearly half of nasoethmoid carcinomas and especially predominates in carpenters (occupational disease). It results in an isodense and often heterogeneous, necrotic mass, moderately enhanced by the contrast with neighboring bone erosion

Other malignant tumors: (Adenoid cystic carcinoma, Mucoepidermoid carcinoma, Malignant melanoma, bone and cartilaginous sarcoma, Lymphoma, Malignant Schwannoma and Metastasis): not found in our series except 1 case of metastasis, Their imaging aspects are often difficult to differentiate. These are exceptionally rare tumors at the level of the maxillofacial location. [8, 9, 43]. The CT assessment assesses locoregional extension, in particular at the base of the skull, in the orbit and / or in soft tissues. [8, 9, 44].

CONCLUSION

There are many malignant tumors affecting the jawbones. Although rare, their early diagnosis can have a significant impact on the long-term survival and quality of life of patients. Imaging occupies an important place in this process, in particular CT, which makes it possible to orient the diagnosis, carry out the extension assessment and above all contribute a lot to post-treatment follow-up. It then allows rapid treatment provided that the correct diagnosis is made.

References

1. MONVILLE Danaé. Intérêt de l'imagerie dans le diagnostic des lésions malignes des maxillaires, thèse,Aix Marseille UniversitéFaculté d'Odontologie de Marseille Mars 2018.
2. Ruhin-Poncet B, Martin-Duverneuil N. Conduite à tenir devant une image radioclaire des mâchoires. Actual Odonto-Stomatol. 2014;(270): p.4–12.
3. Brierley J, Gospodarowicz MK, Wittekind C. TNM classification of malignant tumours. Hoboken, USA: Wiley-Blackwell; 2017. 272.
4. Cavézian R, Pasquet G. L'imagerie médicale en odontologie. Rueil-Malmaison: Éditions Cdp;2005. 183.
5. Martin-Duverneuil N, Hodez C. Imagerie dentaire, sinusienne et maxillo-faciale: du cone beam à l'IRM. Paris : Lavoisier Médecine Sciences; 2016. 310.
6. Cavézian R, Pasquet G. Imagerie dento-maxillaire. Paris : Masson; 2001.
7. Lucie Grosjean. Les tumeurs malignes au niveau du maxillaire : prise en charge des patients et qualité de vie après réhabilitation. Sciences du Vivant [q-bio]. 2010. hal-01738922
8. Martin-Duverneuil. NTumeurs du massif facial EMC - Radiologie et imagerie médicale - musculosquelettique - neurologique - maxillofaciale Volume 8 n◦1 mars 2013http://dx.doi.org/10.1016/S1879-8551(12)59944-631-675-A-20
9. Martin-Duverneuil N, Auriol M. Les tumeurs maxillo- faciales – Imagerie – Anatomopathologie. Montpellier: Sauramps; 2004.
10. Martin-Duverneuil N, Chiras J. Imagerie maxillo-faciale. Paris: Flam- marion Médecine-Sciences; 1997.
11. Kramer IR, Pindborg JJ, Shear M. International histological classification of tumours: histological typing of odontogenic tumours. Berl: Springer-Verlag; 1992.
12. Kramer IR, Pindborg JJ, Shear M. The WHO histological typing of odontogenic tumours: a commentary of the second edition. Cancer 1992;70:2988–94.
13. Barnes L, Eveson JW, Reichart P, Sidransky D. World Health Organization of Tumours. Pathology and genetics of head and neck tumours. Lyon: IARC Press; 2005. p. 283-328.
14. Taylor AM. New findings and controversies in odontogenic tumors. Med Oral Patol Oral Cir Bucal 2008;13:E555–8.
15. Martin-Duverneuil N, Hodez C. Les lacunes des maxillaires – Quelle vision avec le Cone Beam ? In: Hodez C, Bravetti P, editors. Imagerie dento-maxillo-faciale par faisceau conique « Cone Beam». Montpellier: Sauramps; 2010. p. 213–20.
16. Cavezian R, Pasquet G. « Cone beam » Imagerie diagnostique en odontostomatologie – Principes, résultats et perspectives. Issy-les- Moulineaux: Elsevier Masson; 2011.
17. Jing W, Xuan M, Lin Y. Odontogenic tumours: a retrospective study of 1642 cases in a Chinese population. Int J Oral Maxillofac Surg2007;36:20–5.
18. Minami M, Kaneda T, Ozawa K. Cystic lesions of the maxilloman- dibular region: MR imaging. Distinction of odontogenic keratocysts and ameloblastomas from the other cysts. AJR Am J Roentgenol 1996;166:943–9.
19. Zwahlen RA, Gratz KW. Maxillary ameloblastomas: a review of the literature and of a 15-year database. J Craniomaxillofac Surg 2002;30:273–9.
20. Konouchi H, Asaumi J, Yanagi Y. Usefulness of contrast-enhanced- MRI in the diagnosis of unicystic ameloblastoma. Oral Oncol 2006;42:481–6.
21. Ariji Y, Morita M, Katsumata A. Imaging features contributing to the diagnosis of ameloblastomas and keratocystic odontogenic tumours: logistic regression analysis. Dentomaxillofac Radiol 2011;40:133–40.
22. Ba K, Li X, Wang H. Correlation between imaging features and epithelial cell proliferation in keratocystic odontogenic tumour. Den-tomaxillofac Radiol 2010;39:368–74.
23. Martin-Duverneuil N, Auriol M, Guilbert F, Bertrand JC, Chiras J. Odontogenic keratocysts – A 10-year radio-clinicopathological review.14 th Annual meeting of the ESHNR – Ancona, 2001.
24. Myoung H, Hong SP, Hong SD. Odontogenic keratocyst: Review of 256 cases for recurrence and clinicopathologic parameters. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2001;91:328–33.
25. Lam EW, Lee L, Perschbacher SE, Pharoah MJ. The occurrence of keratocystic odontogenic tumours in nevoid basal cell carcinoma syn- drome. Dentomaxillofac Radiol 2009;38:475–9.
26. Kimonis VE, Mehta SG, Digiovanna JJ, Bale SJ, Pastakia B. Radiological features in 82 patients with nevoid basal cell carcinoma (NBCC or Gorlin) syndrome. Genet Med 2004;6:495–502.
27. Tomich CE. Benign mixed odontogenic tumors. Semin Diagn Pathol 1999;16:308–16.
28. Yonetsu K, Nakamura T. CT of calcifying jaw bone diseases. AJR Am J Roentgenol 2001;177:937–43.
29. Toida M. So-called calcifying odontogenic cyst: review and discussion on the terminology and classification. *J Oral Pathol Med* 1998;27:49–52.

30. Martin-Duverneuil N, Roisin-Chausson MH, Behin A, Favre- Dauvergne E, Chiras J. Combined benign odontogenic tumors: CTand MR findings and histomorphologic correlation. AJNR Am J Neu-roradiol 2001;22:867–72.
31. Yoshiura K, Tabata O, Miwa K. Computed tomographic features of calcifying odontogenic cysts. Dentomaxillofac Radiol 1998;27:12–6.
32. Uchiyama Y, Akiyama H, Murakami S. Calcifying cystic odontogenic tumour: CT imaging. Br J Radiol 2012;85:548–54.
33. Philipsen HP, Reichart PA. Revision of the 1992-edition of the WHO histological typing of odontogenic tumours. A suggestion. *J Oral Pathol Med* 2002; 31:253–8.
34. Abdelsayed RA, Eversole LR, Singh BS, Scarbrough FE. Gigantiform cementoma: clinicopathologic presentation of 3 cases. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2001;91:438–44.
35. Kim JH, Song BC, Kim SH, Park YS. Clinical, radiographic and histological findings of florid cemento-osseous dysplasia: a case report. Imag Sci Dent 2011;41:139–42.
36. Kim GT, Lee JK, Choi BJ, Kim J, Han SH, Kwon YD. Malignant transformation of monostotic fibrous dysplasia in the mandible. *J Craniofac Surg* 2010; 21:601–3.
37. Hitomi G, Nishide N, Mitsui K. Cherubism. Diagnostic imaging andreview of the literature in Japan. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 1996;81:623–8.
38. Güngörmüs M, Akgül M. Central giant cell granuloma of the jaws: a clinical and radiologic study. *J Contemp Dent Pract* 2003;4:87–97.
39. Copete MA, Kawamata A, Langlais RP. Solitary bone cyst of the jaws:radiographic review of 44 cases. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 1998;85:221–5.
40. Matsumura S, Murakami S, Kakimoto N. Histopathologic and radiographic findings of the simple bone cyst. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 1998;85:619–25.
41. Devenney-Cakir B, Subramaniam RM, Reddy SM, Imsande H, Gohel A, Sakai O. Cystic and cystic-appearing lesions of the mandible: review. AJR Am J Roentgenol 2011;196:WS66–77.
42. Ojiri H, Ujita M, Tada S, Fukuda K. Potentially distinctive features ofsinonasal inverted papilloma on MR imaging. *AJR Am J Roentgenol* 2000;175:465–8.
43. Valentini V, Nicolai G, Lorè B, Aboh IV.Intraosseous hemangiomas. J Craniofac Surg 2008;19:1459–64.
44. Taneja AK, Reis F, de Queiroz LS, Zanardi VA. Esthesioneuroblastoma. Arq Neuropsiquiatr 2999; 67: 704-6.

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