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Locally advanced maxillary sinus carcinoma controlled by para-latero-nasal approach

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ABSTRACT

Sino-nasal cancers are a rare pathology, with an incidence of 0.2–0.8% of all cancers, and less than 5% of ENT cancers. The site that is most often affected is the maxillary sinus in 35% of cases, followed by ethmoid sinus (30%) and of the nasal cavity in (16%). Several histological variants are described, but squamous cell carcinoma remains the most frequent in the maxillary sinus. Its diagnosis is often late making local control very difficult. Multimodal treatment allows an improvement in the survival rate compared to single treatment.

Due to the progress of endoscopic surgery, external surgery is neglected. With this work we want to highlight the value to the external approach, especially in advanced cases.

1. Introduction

Sino-nasal cancers are a rare pathology, with an incidence of 0.2–0.8% [1] of all cancers and less than 5% of ENT cancers [2]. Its annual incidence is 1/100,000 inhabitants. Diagnosis is histological after a biopsy of the mass. The reference treatment is based on surgical excision by external or endoscopic approach supplemented by radiotherapy or chemotherapy [3]. The prognosis is poor due to late diagnosis. Surgical excision is most often mutilating with large defect. Morbidity and mortality are significant due to the difficult local control if the orbit or skull base are involved. Endoscopic approach allows a reduction in morbidity in selected cases. On the other hand, the external para-latero-nasal approach, by its slightly high morbidity, ensures good local control of the disease [4].

A multimodal treatment protocol comprising surgery and radiotherapy or surgery with chemotherapy is associated with a better survival rate compared to surgery or radiotherapy alone [5].

Through our observation we want to describe a case of carcinoma of the maxillary sinus locally advanced with intra-orbital extension treated by para-latero-nasal approach and show that this modality is still valid in similar cases.

This case report has been reported in line with the SCARE Criteria at the end of the introductory section.

2. Case presentation

We present a case of a 47-year-old man, with no medical history, he suffered from chronic unilateral left tearing that has been evolving for 4 months associated with a bulging of the internal canthus and facial paresthesia. The patient did not complain of rhinological signs. Physical examination found an inflammatory mass of internal canthus, hard and painful, measuring three cm (Fig. 1). Anterior rhinoscopy showed a mass occupying the entire left nasal cavity. Palpation revealed hypoesthesia of the V2 territory associated with left cervical lymphadenopathy at level Ib and II. He also had a reduction in visual acuity to 3/10 in the left eye with a deficit in oculomotricity.

CT scan (Fig. 2) and cranio-orbital MRI (Fig. 3) showed a mass of the left maxillary sinus hypointense in T1 weighted images and hypersignal in T2, measuring 57 × 53 × 36 mm. It fills the left nasal cavity and anterior homolateral ethmoid with lysis of its internal wall. It also invades the internal wall of the orbit and the intra-conical and extra-conical fat. It is associated with an homolateral fronto-ethmoidal mucous retention; thus, the patient was classified T4a.

An endoscopic biopsy of the mass under local anesthesia showed a poorly differentiated and invasive squamous cell carcinoma.

A combined para-latero-nasal and vestibular approach was performed which allowed good macroscopic control of the tumor as well as its extension at the orbit with left orbital exenteration. We also performed lymph node dissection of Ib, II and

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Fig. 1. Clinical appearance of the internal canthal mass.

III territories (Fig. 4). Histopathological study of the specimen showed an invasive poorly differentiated squamous cell carcinoma with vascular emboli but without lymph node metastasis. The limits of excision were non-tumoral. Then patient had radiation therapy. The patient remained tumor free at his one-year follow-up.

3. Discussion

Sino-nasal cancers are a rare entity, with an incidence of 0.2–0.8% [1] of all cancers and less than 5% of ENT cancers [2]. All ages are affected with a peak in young adults and older people. Median age is around 60 years. There is no sex predominance [1]. The most affected site is the maxillary sinus in 35% of cases, followed by ethmoid cancer (30%) and nasal cavity (16%) [3]. Diagnosis is often made at a late stage (T3 or T4) (65%–85%) [3] because symptoms are not specific (nasal obstruction in 60–90% and ophthalmologic manifestations in 30–50% of cases) [4]. Several histological variants are possible, but squamous cell carcinoma remains the most frequent in the maxillary sinus (80%) [1].

Radiological assessment is based on CT scan which gives a better analysis of bone damage and erosion [6]. If there is any doubt about soft tissue invasion such as intracranial extension, orbital involvement, involvement of the pterygopalatine fossa, infratemporal fossa and parapharyngeal spaces, MRI becomes essential.

Prognosis of these locally extended tumors is poor, and depends mainly on the local control, often made difficult by the proximity of the skull base and the orbit [1].

Since local recurrence is very frequent, the main aim of treatment is to obtain good local control [7]. Management takes into account survival, morbidity and upper airway function.

Treatment of maxillary sinus carcinoma depends on its local and regional extension. It consists at first-line on complete surgical excision, followed most often by radiotherapy at a therapeutic dose. In rare cases, neoadjuvant chemotherapy may be indicated to minimize tumor volume, then surgery which may or may not be followed by radiotherapy. Finally, if the patient is inoperable, palliative treatment will consist on radiotherapy and chemotherapy [8].

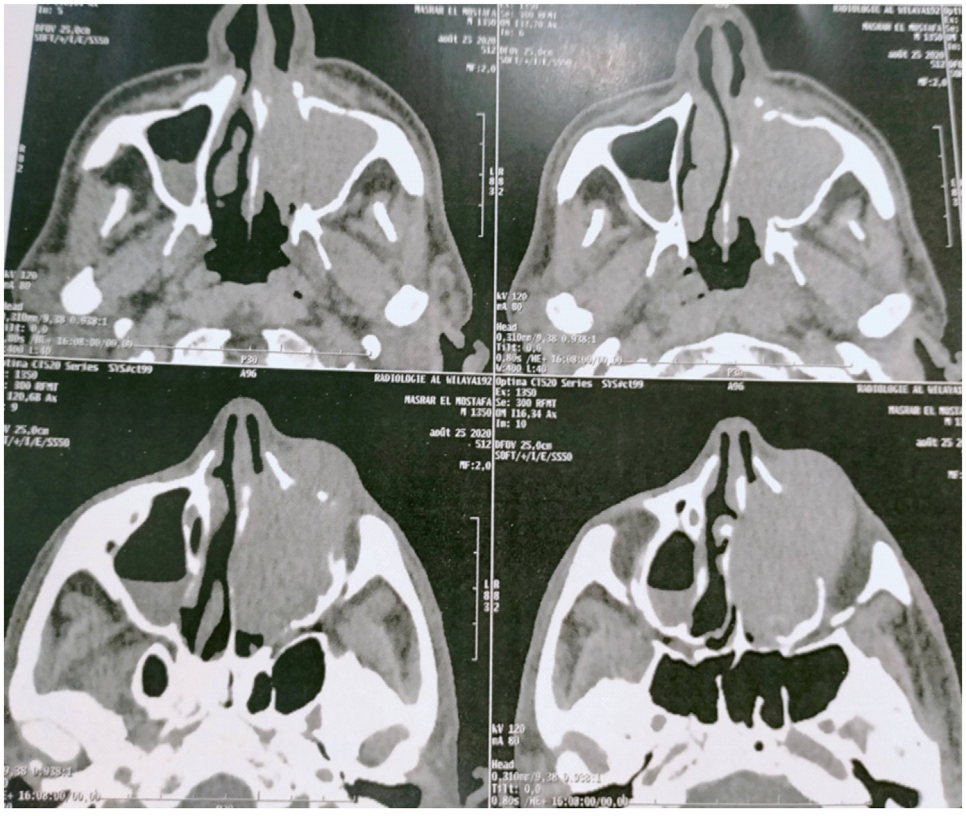

Fig. 2. Tumor process of the left maxillary sinus with lysis of the anterior and internal walls and subcutaneous invasion.

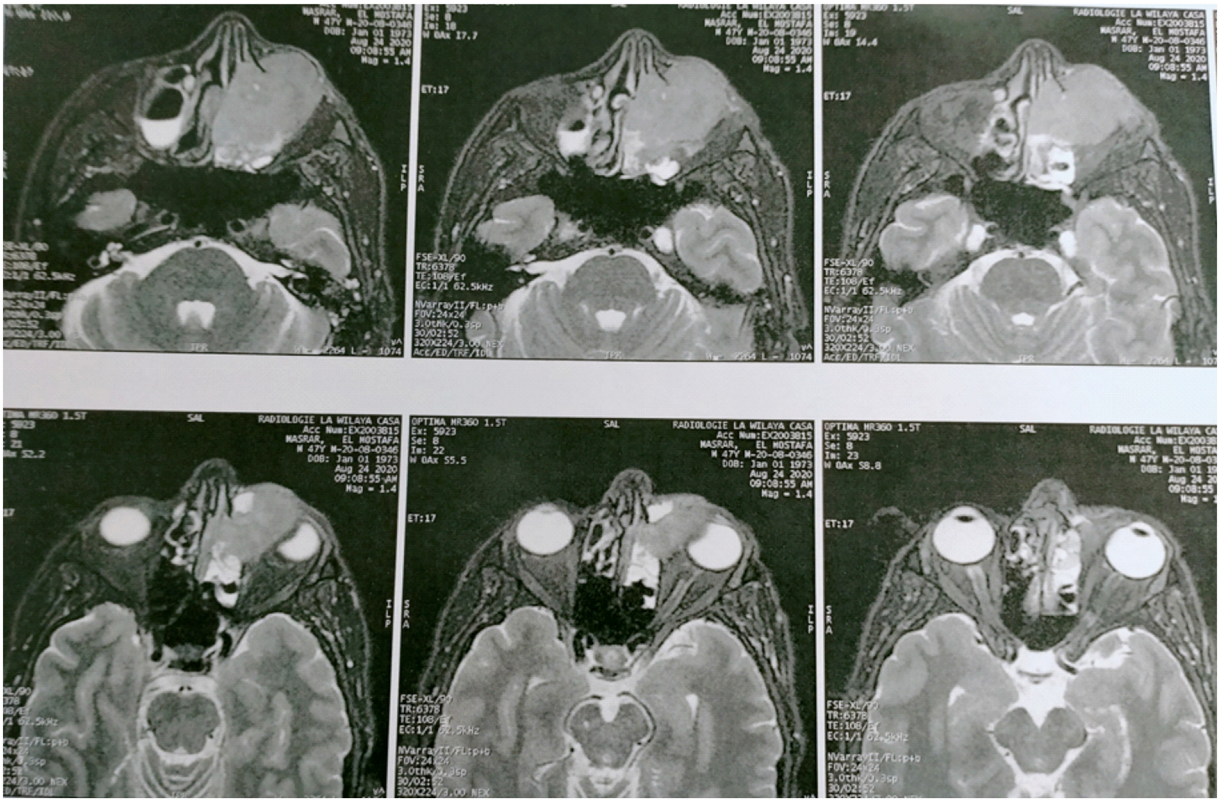

Fig. 3. Intra-orbital invasion with infiltration of periorbital fat and ethmoid cells on MRI.

Fig. 4. Para-latero-nasal approach with left exenteration.

Surgical treatment for maxillary sinus carcinoma is the treatment of choice. Lymph node dissection is performed if there are any lymphadenopathies. The reported incidence of cervical lymph node metastases is 10–20% [9]. Surgical excision corresponds to a partial, total, or extended maxillectomy, with resection of the neighboring anatomical structures affected by the tumor [10]. This tumor resection must respect three precise rules: The most complete possible excision of the tumor, adequate excision margins in order to avoid possible recurrence, while combining the most possible aesthetic result [11].

Surgery can be done by external approach or endoscopic sinus surgery, depending on local tumor extension and the invasion of neighboring structures.

Functional endoscopic sinus surgery is a minimally invasive technique which allows the excision of benign tumors as well as certain malignant tumors (esthesioneuroblastoma, ethmoid adenocarcinoma, etc.). For sino-nasal cancer treated by endoscopic approach, several studies are in favor of carcinologic safety for carefully selected patients [11]. Endoscopic approach by the absence of facial incision allows good control of hemostasis and by the visual magnification, allows reduction of morbidity observed in external approaches [12]. On the other hand, by the absence of a “monobloc” resection, the endoscopic approach runs the risk of dissemination and therefore poor local control [13]. In addition to the difficulty to determine surgical margin status [14].

External approach is a therapeutic alternative when tumor extension does not allow satisfactory endoscopic resection [15]. External approach includes several techniques in particular the para-latero-nasal approach and cranio-facial resection which allow a good local control of the tumor. However, this approach is associated with many side effects, including facial scars, intracranial and extracranial complications, and longer hospital stay resulting in a significant morbidity and perioperative mortality [16].

Regardless of the surgical approach, maxillary sinus carcinoma has an overall survival rate of 63% at 12 months, 20% at 24 months and 9% at 5 years [17].

Naoki Nishio and al has shown that advances in imaging and surgical techniques, particularly cranio-facial resection, have contributed to improving patient survival rates [18].

Yao-Rong Su et al. in his work on the value of multimodal treatment (surgery and radiotherapy, or radio-chemotherapy) showed that the 3-years survival is markedly increased in the multimodal treatment group compared to the monotherapy group (surgery alone or radiotherapy alone) with a survival rate at 46% versus 25% and, 19% respectively [19].

4. Conclusion

Maxillary sinus carcinoma remains a rare pathology, its diagnosis is often late due to non-specific symptoms. The radiological assessment is essential in order to determine the tumor extension, as well as discuss the surgical approach.

Endoscopic approach has been shown good results in terms of local control and survival rate, provided that patient's selection is rigorous. External approach remains the approach of choice when the tumor is very advanced locally allowing tumor excision in monobloc at the expense of a loss of substance of the neighboring tissues. The best control is optimized post-surgery by full dose radiotherapy on the tumor bed.

Declaration of Competing Interest

None.

Funding

None.

Ethical approval

The study is exempt from ethical approval in our institution as it is a "Case report" and not a research study.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Author contribution

M. Lahjaouj: Investigation, Resources, Writing – original draft, Writing - Review & Editing, Visualization. **S. Halily:** Investigation, Resources, Writing - Review & Editing. **A. Chaouki:** Investigation, Resources, **Y. Oukessou:** Review & Editing. **R. Abada:** Validation, Supervision. **M. Roubal:** Validation, Supervision. **M. Mahtar:** Validation, Supervision.

Registration of research studies

Not applicable.

Guarantor

M. Lahjaouj.

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