Introduction

Ethmoidal tumour is a rare pathology. In most cases, it does not present symptoms but reveals itself later, involving the facial structures. Repeated epistaxis, late exophthalmos, periorbital space invasion, glabellar frontal and periorbital swelling are the clinical findings. Peripheral metastases are shown in skeleton, liver and lung. In 7-15% of cases lymph node diffusion is present, within 4 years from diagnosis (1), in relation with size and grading of the tumour. We analyzed the diagnosis and treatment of primary ethmoidal cancer and pulmonary secondary lesions in a 68 years old patient.

Case report

A 68-year-old patient showed persistent mucous haematic rhinorrhea, dyspnea, cough and evening fever. Magnetic resonance imaging (MRI) of the skull showed an ethmoidal lesion, with a diameter of 3 cm and irregular margins. The chest ray highlighted a right pulmonary opacity. Computed tomography (CT) of the thorax revealed the presence of a solid nodular formation with a 4 cm axial diameter, located in the ventral segment of the right upper pulmonary lobe and adherent to the mediastinal pleura and the superior cava vein. CT also showed a lymph node of 2 cm in diameter in the Baretty ridge. The fiber-optic bronchoscopy was negative.

The histologic exam of the CT-guided needle biopsy revealed a...
carcinoma not well specified. The patient underwent rigid rhino-
scopy with biopsies that showed an ethmoidal adenocarcinoma;
trans-sphenoidal excision of tumour was carried out.

One month later the patient was submitted to a video-assisted
thoracoscopy (VATS) of the right lung. The upper pulmonary lobe
appeared partially adherent to the thoracic wall. After dissection of
the parenchyma, we noticed an oval white neoformation in the
ventral segment of the upper lobe, with a soft-elastic consistency. In the
lower lobe we also found two neoformations with a hard-elastic
consistency and a diameter of 0.8 cm. The frozen section examina-
tion revealed tumour with some pattern of the adenocarcinoma
that could be assimilated to the previous neoplasm of the ethmoid.
We performed wedge-resections of the masses with Endo-GIA 30
Blue (Ethicon Endosurgery) with support in Gore-T ex (Seam-
guard, W.L. Gore & Associates, USA); the mediastinal lymph no-
de was removed.

The patient was discharged on the third day. He began 6 cycles
of adjuvant chemotherapy treatment with Cisplatin (100 mg/m²,
day 1) and Gemcitabine (1000 mg/m², day 1 and 8) every 21 days.
After 12 months the CT total-body did not show the presence of
relapses.

Discussion

Our study showed that MRI and CT are essential
to allow the diagnosis and the staying of ethmoidal car-
cinoma differentiating between opacities due to secre-
tions and opacities due to masses. MRI represents the
best technique to characterize the neoplasm from
nearby tissues and to define the periosteal and connec-
tive limits. In T2-weighed sequences MRI allows us to
distinguish tumour from inflammatory tissue throu-
ght signal intensity based on the different protein con-
centration; T1-weighed sequences show anatomical
structures of small size (2, 3). High resolution CT al-

ows to evidence better bony erosions, because it di-

plays the calcification component of the bone, and to

find the distant metastasis.

In order to have a more accurate diagnosis it is also

useful to perform a trans-nasal biopsy.

After radiotherapy these exams present variations in
the intensity of the adipose tissue signal, explained
both in the increase of the thickness of the periplast
component and in the thickness of the muscles, due to
the inflammation and edema, secondary to the treat-
ment, and to alterations of the medullary component
of the bone. These variations are much more visible
with MRI; that shows hypo and hyperintense areas,
rather than with CT. The initial edema will leave space
to a progressive fibrosis and to a reduction of muscular
thickness 6 months after radiotherapy.

Naso-sinusal cancers are uncommon (about 0.8%
of all the cancer and about 3% of head and neck can-
cers). The prognosis of these malignant neoformations is
unfavorable notwithstanding the several strategies of
treatment (surgery and/or chemotherapy and/or ra-
diotherapy). It is conditioned by the extension of the

pathology to near zones (orbit, basicraniun, encepha-
lon and cavernous sinus) and by the aggressive istologi-

tical type (melanoma, neuroendocrinous tumor and in-
differentiated cancer). At present the therapeutic gold
standard is the external monolateral subtotal ethmoid-
dectomy (EMST) and anterior craniofacial resection
(RCFA). The medial ethmoidectomy and maxillec-
tomy of Session and Larson (1977) is an external re-
section of all ethmoidal bone except the fovea, the cri-
brose lamina and the whole lateral wall of nasal fossa
as far as the pavimentum. We use a lateral rhinotomy,

than we remove a nasal bone and a part of maxillary
bone process. When it is possible we preserve the naso-
lacrima system. When the neoplasm does not allow
EMST for its large diffusion, it is better to make a sa-
fety craniofacial resection (RCF). In 1941 Dandy pro-
posed a transcranial and transfacial surgery approach.
There are two different surgical approaches in the can-
cer of ethmoidal roof by Melekci and Ketcham: a) tra-

ncranial and transfacial approach with frontal cra-
niotomy and nasal-maxillary bony flap; b) transfacial
approach.

A RCF begins with the access to the tumour by the
detachment of bony flaps followed by the excision of
the bony block and the fleshy parts containing the
neoplasm and then the zone is rebuilt. The resection
margins are defined by the diagnostic image. If the can-
cer invades the FCA, we remove the median part of its
floor (the ethmoidal fovea and the cribrose lamina).
The excision block is sometimes constituted of a part
of FCA (dura mater, olfactory benderel and cerebral
parenchyma), of both the ethmoidal blocks, of the me-
dial bony wall of the orbit or of the papyraceous lami-
nae of the two sides; it can also be part of the nasal sep-
tum, of the lateral walls of the nasal fossae as far as the
pavement in the site where the tumour is more advan-
ced. These surgical technique are very aggressive and
they have often functional and aesthetic consequences.

Endoscopic rhinosinusal surgery was born in the
Seventies. For fifteen years these technique was consi-
dered the best treatment of the phlogistic rhinosinusal
pathology because of its microinvasiveness (4, 5). Later
in the Eighties and Nineties the technique was also
used for benign nasosinusal tumours (inverted papillo-
a, juvenile angiofibroma) and for the basicraniun
pathology (dural plasty for rhinoliquor fistulae and the
treatment of the sellar pathology). In the second half of
the Nineties a good technical development allowed
their use for the nasosinusal malignant tumour patho-

logy (6-8). In 1995 Jorrisen (6) applied this technique
in 8 patients suffering from nasosinusal malignant tu-
mour but he did not show the efficacy of the procedu-
re. Goffart et al. (9) showed the efficacy of endoscopic
surgical technique in 78 patients (66 of them were trea-
ted with the pure endoscopic approach). The study was
Ethmoidal adenocarcinoma with lung metastases: diagnosis and multimodal treatment

effected in two different centers; total survival at 2 and 5 years was respectively 63.4% and 52.3%. Ethmoidal adenocarcinoma had better results, with a survival of 89.8% and 63.8% respectively after 2 and 5 years. Jorissen (6) has shown that tumours involving the fore and posterior ethmoide, the upper side and the medial part of the maxillary sinus or the sphenoidal sinus and the front recess can be treated by an exclusive endoscopic approach. This technique is not advised for those tumours involving the fore-inferior wall of the maxillary sinus and the frontal sinus. If the cancer included the maxillary sinus and frontal sinus the endoscopic surgery is not indicated. Therefore, the tumours extending beyond the limits of the paranasal sinus are not generally treated by intranasal surgery.

Radio and chemotherapy results are still debated. Preoperative radiotherapy stabilizes the disease. In the postoperative stage, it allows sterilization of the residual neoplasm; this combination guarantees a survival rate of 45-50% at 5 years. An interstitial brachytherapy with filiform sources of Iridium^{192} may be used if the mass has limited dimensions. Radiotherapy makes use of external bundles of high energy photons of ray type (ERT) or Gy radiations of Cobalt. Doses of 60 Gy/20 fractions in 5 weeks are used in the first stages of the pathology (T_{1}-T_{2}, N_{0}) when the surgical margins are negative and in patients with risk factors who underwent chemotherapy. Greater doses of 70 Gy are used for patients with stage T_{3}-T_{4}, N_{1}-N_{2}-N_{3} who underwent only radiotherapy and did not present risk factors (10). It is also possible to use a further dose of 16-20 Gy in 10 fractions in those cases in which the surgical resection margins are positive. Postoperative radiotherapy should begin 6 weeks after surgical intervention. The utilization of systemic chemotherapy aims at improving aggregate survival. High local doses of chemotherapy have been correlated to a lower incidence of collateral effects. The use of cisplatin supplied locally in high concentrations, improves the response and the control of the disease. A better control of the pathology, of the peripheral metastases and of survival is obtained with neoadjuvant chemotherapy, which reduces the tumour mass. On the contrary, adjuvant chemotherapy is less tolerated especially in the more advanced stages when radiotherapy is usually used.

Follow-up depends on factors such as treatment and the individual risk of relapse; it is generally performed every 1-3 months in the first year and every 6

References