Case report

Liver metastasis of ethmoid sinus adenocarcinoma

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A R T I C L E   I N F O

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A B S T R A C T

Introduction: Sinonasal cancer is an uncommon neoplasm, often associated with exposure to occupational hazards and delayed diagnosis.

Case report: The authors report a rare case of solitary liver metastasis from ethmoid sinus adenocarcinoma treated by surgical resection. No clinical or radiological sign of recurrence was observed with a follow-up of 3 months.

Discussion: Adenocarcinoma of the ethmoid sinus is characterized by its aggressiveness and its tendency to recurrence. Metastases are rare and can be found in unexpected organs due to dissemination via collateral venous plexuses. The role of chemotherapy has not been clearly established. Due to their rarity, the treatment of metastases has not yet been defined.

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1. Introduction

SINonasal cancers represent less than 1% of all cancers and are associated with occupational exposure in 25 to 41% of cases [1]. Adenocarcinoma is a malignant glandular tumour, accounting for between 10 and 20% of all sinonasal cancers [1,2]. Due to the poor lymphatic drainage of the paranasal sinuses, lymph node metastases are rare, detected in only 2 to 3% of cases [3]. Bone, lung and brain metastases have been described [4].

Local control of these tumours is ensured by a combination of surgery and radiotherapy. The prognosis is generally poor with an overall survival rate of 51% ± 14% [5]. Exclusive radiotherapy or chemoradiotherapy are reserved for very advanced and inoperable stages, such as extensive orbital and/or intracranial invasion [6].

We report a case of isolated liver metastasis from an ethmoid sinus adenocarcinoma.

2. Case report

A 61-year-old man with no notable medical history was referred by his general practitioner with unilateral left bloody rhinorrhoea for two months. Clinical interview revealed blocked nose and anosmia, as well as prolonged exposure to wood dust, as the patient had worked as a carpenter for 34 years.

Endoscopic examination revealed a tumour of the left nasal cavity, extending from the olfactory cleft to the floor of the nasal cavity. Biopsy under local anesthesia confirmed the diagnosis of moderately well differentiated intestinal-type adenocarcinoma.

Contrast-enhanced CT scan (Fig. 1) and MRI demonstrated a tumour of the left nasal cavity with displacement of the nasal septum and the turbinal wall of the ethmoid sinus and minimal extradural extension to the anterior cranial fossa and sphenoid sinus. No metastatic lymphadenopathy was suspected. The cancer was staged as T4a N0 M0.

In December 2009, endonasal tumour resection comprising total ethmoidectomy with middle turbinectomy and resection of the olfactory cavity was then performed, followed by skull base reconstruction by nasal mucosa flap with fixation by fibrin glue and a fragment of synthetic dura mater. External beam radiotherapy was then delivered to the tumour bed with a dose fractionation of 60 Gy in 30 fractions over 6 weeks.

Subsequent follow-up comprised nasal endoscopy every three months and MRI at three months, and then annually.

In April 2012, abdominal ultrasound followed by MRI were performed in a context of abdominal pain, and revealed a tumour in the left lobe of the liver (Fig. 2). Ultrasound-guided fine-needle aspiration cytology revealed the presence of intestinal-type adenocarcinoma.
After discussion of this patient’s case at a multidisciplinary consultation meeting, upper and lower gastrointestinal endoscopy was performed to exclude a second primary tumour, and did not reveal any other lesions. Comparative examination of histological slides was requested and revealed immunohistochemical and morphological features compatible with metastasis from the adenocarcinoma detected during nasal surgery (Fig. 3).

In August 2012, after exclusion of other metastatic lesions on imaging examination, the patient was treated by partial hepatectomy with no adjuvant therapy. The current survival with no clinical or MRI signs of recurrence is six months.

3. Discussion

Adenocarcinoma of the ethmoid sinus is rare. Most patients present with an advanced tumour at the time of diagnosis and the clinical stage is generally not predictive of prognosis. These patients often die as a result of local recurrence [1–4].

Distant metastases are detected in only less than 2% of cases, mostly involving bone [4]. Haematogenous spread of metastases to the liver would typically require passage through the lungs before entering the liver via the hepatic artery; exclusion of the presence of other metastases is therefore essential. The absence of lung metastases in the present case could be explained by dissemination via the vertebral venous plexus and its numerous anastomoses with the aygos veins, which constitute a longitudinal network parallel to the inferior vena cava [7]. Tumour cells may therefore have reached the liver via the portal system through the aygos and peri-oesophageal veins. Many other collateral pathways are also possible.

The sinus mucosa has an ectodermal origin and therefore does not present any features of intestinal differentiation. Sinonasal adenocarcinoma of the intestinal-type would appear to be due to transformation of a normal phenotype into an intestinal phenotype [8].
According to Kennedy et al., exposure to wood dust and other agents induces either squamous cell metaplasia or cuboidal cell metaplasia of the respiratory mucosa. Activation of CDX-2 (caudal-related homeobox 2), a transcription factor specific to adult intestinal epithelium, can induce and maintain this metaplasia, with acquisition of a complete intestinal phenotype [8].

Ethmoid sinus adenocarcinoma has a variable morphological appearance and can resemble normal intestinal mucosa, gastric intestinal metaplasia, Barrett’s oesophagus, villous adenoma or colorectal adenocarcinoma. Similarities between ethmoid sinus and colorectal adenocarcinomas are not only histological, but also ultrastructural and immunohistochemical [8]. The differential diagnosis must therefore be carefully evaluated, with exclusion of an intestinal disease by intestinal endoscopy.

The treatment of advanced cancer of the ethmoid sinus has not been clearly defined. Adjuvant chemotherapy can be proposed, but its efficacy has not been demonstrated [4]. However, on the basis of the similarities between ethmoid sinus and colorectal adenocarcinoma and the results obtained in the treatment of advanced stages of these cancers, treatment with anti-epidermal growth factor (EGFR) monoclonal antibody could possibly be considered in the future.

This case has a limited follow-up and careful local and distant surveillance remains essential.

4. Conclusion

Distant metastases from ethmoid sinus adenocarcinoma are rare and can involve unexpected organs via collateral venous plexuses. The intestinal phenotypes of ethmoid sinus and colorectal adenocarcinomas are very similar, possibly raising a difficult differential diagnosis and allowing a common treatment to be proposed for advanced stages.

Disclosure of interest

The authors declare that they have no conflicts of interest concerning this article.

References