Intracapsular carcinoma ex pleomorphic adenoma in a young man

Carcinome ex adénome pléomorphe intracapsulaire de la parotide chez un adulte jeune

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ABSTRACT

Objective: We describe an unusual case of an intracapsular carcinoma ex pleomorphic adenoma of the parotid gland to discuss its pathologic diagnosis and treatment.
Observation: A 22-year-old man presented with a 4 cm mass of the right parotid gland of a 3 years duration, indurated, without facial paralysis, skin infiltration or lymph node swelling. The MRI showed a 4 cm mass of the deep lobe of the parotid gland suggesting a pleomorphic adenoma. The patient underwent total parotidectomy. Frozen sections showed features suggestive of a pleomorphic adenoma. The postoperative course was uneventful. On definitive histological examination, the tumor showed solid areas of atypical polygonal epithelial cells. In the background there are remains of chondromyxoid tissue typical of pleomorphic adenoma. Immunohistochemistry showed an immunoreactivity of cytokeratin 5 and p63. The diagnosis of “Intracapsular carcinoma ex pleomorphic adenoma” of the parotid gland was considered. The patient had no further treatment and the MRI performed 6 months after surgery showed no recurrence. At 9 years of follow-up, the patient is free of disease.
Conclusion: Intracapsular carcinoma ex pleomorphic adenoma in young patients is an extremely rare salivary glands tumor with challenges in both the diagnosis and treatment.
Keywords: Parotid gland; Parotid cancer; Carcinoma ex pleomorphic adenoma; Young adult.

RÉSUMÉ

Objectif: Nous décrivons un cas particulier de carcinome intracapsulaire ex adénome pléomorphe de la glande parotide afin de discuter ses caractéristiques anatomopathologiques et son traitement.
Observation: Il s’agit d’un homme de 22 ans qui s’est présenté avec une masse parotidienne droite de 4 cm évoluant depuis 3 ans, indurée, sans paralysie faciale, ni infiltration cutanée et ni adénopathies cervicales. L’IRM a montré une masse de 4 cm du lobe profond de la parotide suggérant un adénome pléomorphe. Le patient a eu une parotidectomie totale. L’examen extemporané était suggestif d’adénome pléomorphe. Les suites post-opératoires étaient simples. A l’examen histologique définitif, la tumeur comportait des zones solides formées de cellules épithéliales polygonales atypiques. La tumeur renfermait un stroma chondromyxoïde typique d’un adénome pléomorphe. L’immunohistochimie a montré une expression de cytokératine 5 et p63. Le diagnostic de «carcinome intracapsulaire ex adénome pléomorphe» de la glande parotide a été retenu. Le patient n’a pas eu de traitement adjuvant et l’IRM réalisée à 6 mois après la chirurgie n’a montré aucune récidive. Avec un recul de 9 ans, le patient ne présente pas de récidive.
Conclusion: Le carcinome ex adénome pléomorphe intracapsulaire est une tumeur extrêmement rare chez les jeunes patients qui pose des défis de diagnostic et de traitement.
Mots clés: Glande parotide; Cancer de la parotide; Carcinome ex adénome pléomorphe; Jeune adulte.

INTRODUCTION

Intracapsular carcinoma ex pleomorphic adenoma is defined as a carcinoma arising within the boundaries of a pleomorphic adenoma (PA), but which fails to display invasion beyond the capsule of host PA [1].
Pathological diagnosis is usually difficult. Intracapsular carcinoma ex pleomorphic adenoma in young patients is rarely reported [2-4].
We describe in this study an unusual case of an intr acapsular carcinoma ex pleomorphic adenoma of the parotid gland to discuss its pathologic diagnosis and treatment.

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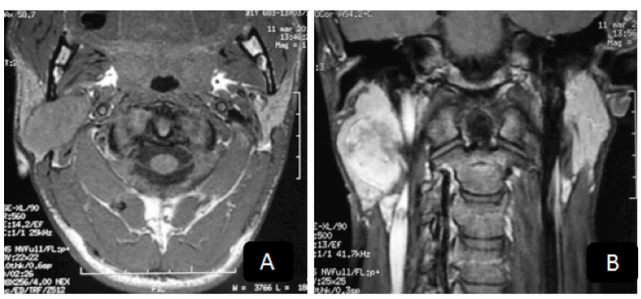
CASE REPORT

A 22-year-old man presented with a 4 cm, palpable painless mass of the right parotid gland of evolving for 3 years. The clinical examination found an indurated swelling of the right parotid with no facial paralysis, skin infiltration or swollen lymph nodes.
The MRI showed a 4 cm mass of the deep lobe of the parotid gland suggesting a pleomorphic adenoma (Figure 1).



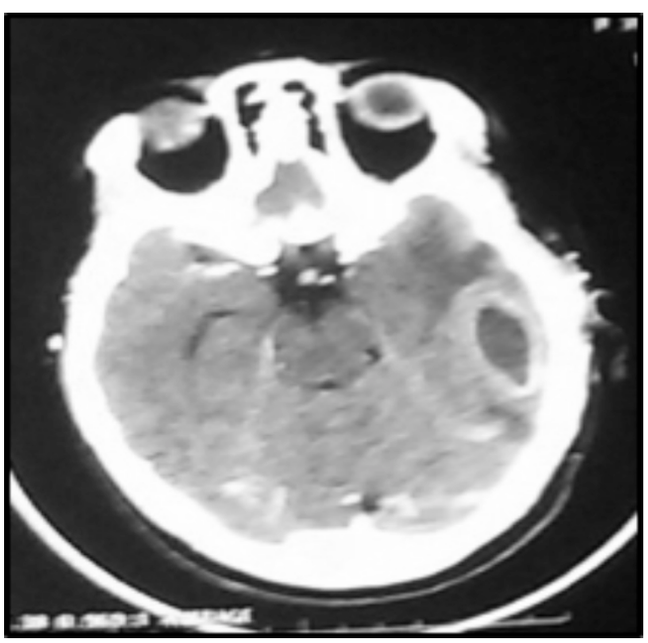


Figure1: MRI showing a 4 cm mass of the deep lobe of the right parotid gland hypointense on T1 W hyperintense on T2W and shows enhancement following gadolinium injection (A): T1 axial (B): T2 coronal (C): T1 axial postgadolinium

The patient underwent total parotidectomy. Frozen sections showed features suggestive of a pleomorphic adenoma. The postoperative course was uneventful. Gross examination showed a grey-white, well-circumscribed tumor measuring 3.5 cm.
Histologically, the tumor was surrounded by a fibrous capsule (Figure 2A). In the background there are remnants of chondromyxoid tissue and tubular epithelial elements characteristic of a pleomorphic adenoma (Figure 2D). Additionally, the tumor showed solid areas of atypical polygonal epithelial cells with enlarged vesicular nuclei and pale eosinophilic staining cytoplasm (Figure 2B and 2C). Few mitotic figures were present. Immunohistochemical study showed immunoreactivity of atypical cells with cytokeratin 5 and p63 confirming there myoepithelial differentiation.

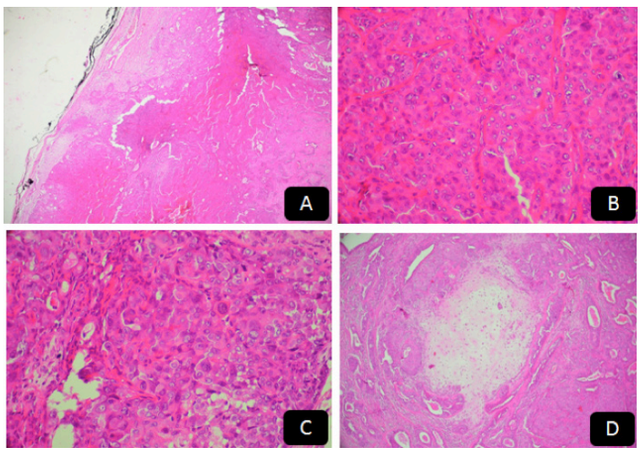


Figure 2: Histological features of the parotid tumor The tumor was surrounded by a fibrous capsule ( ) (HE x 50). B and C: solid areas formed by larges and atypical polygonal eosinophilic cells (HE x 400). D: an area of chondromyxoid background ( ) with glandular structures typical for pleomorphic adenoma (HE x 50).

The diagnosis of “Intracapsular carcinoma ex pleomorphic adenoma” of the parotid gland was considered. A cervical and thoracic CT scan was performed showing no distant lesions. The patient had no further treatment and the MRI performed 6 months after surgery showed no recurrence or suspicious cervical lymphadenopathy. At 9 years of follow up, the patient is free of disease.

DISCUSSION

Carcinoma ex pleomorphic adenoma (CXPA) is a malignant epithelial tumor of salivary glands arising in preexisting pleomorphic adenoma (PA) or in patients with history of excisions and multiple recurrences of PA [1-3]. It has an infrequent occurrence representing 3 to 5% of salivary gland neoplasm and 5 to 15% of salivary gland malignancies [4].
CXPA involves mostly the parotid gland followed by minor salivary glands and submandibular gland with equal sex distribution [3,5].
The patients commonly present in the sixth or seventh decade with a long history of a slowly growing mass of the parotid. CXPA in young patients is extremely rare [2].
The pathogenesis of CXPA remains controversial. Two hypotheses are mentioned: These tumors are malignant from the onset or a carcinomatous transformation of a mixed tumor occurs [6].The usual presentation is that of a long-standing parotid mass with sudden increase in size. The patient may also present with signs of infiltration to the surrounding structures. Invasion into the surrounding structures is an important feature for the diagnosis of CXPA [7]. Few patients may have deep lobe tumors and parapharyngeal tumor extension complained of a slight odynophagia or dysphagia [8].
The risk of malignancy increases with the age of the PA. It is even estimated that cancer eventually develops in up to 25 percent of untreated PAs. Furthermore, the

risk of malignancy is elevated in recurrent PA [9].
Fine-needle aspiration cytology (FNAC) has a low specificity and sensitivity in detecting malignancy of CXPA. Cytology shows cellular and contains dual populations of malignant cells and benign residual PA cells [2,8].
Histology is the gold standard for diagnosis and immunohistochemical stains are required only for finer categorization of the malignant component [10].
The histological diagnosis of CXPA requires the presence of either a recognizable PA in association with a carcinoma or a carcinoma developing as a recurrent neoplasm at the site of a previous PA. CXPA are subclassified in intracapsular carcinoma, in minimally invasive carcinoma (extracapsular tumor invasion less than 1.5 mm), and in invasive carcinoma (extracapsular tumor invasion more than 1.5 mm [6]. The malignant component may show high-grade adenocarcinoma, salivay duct carcinoma or myoepithelial carcinoma (as our case) features [11]. Recently, Rito and Fonseca proposed to move the depth of invasion to classify the wide invasive type to 2.5 mm. The authors based their hypothesis on the analysis of a single-institution series of 58 CXPAs, having found prognostic value using that cut-off [12].
Treatment of CXPA must be individualized on the basis of the tumor location, involvement of adjacent structures, histologic subtype, and grade [3,7].
The ablative surgery often involves total parotidectomy. Superficial parotidectomy is used for intracapsular or minimally invasive CXPA localized to the superficial lobe of the parotid gland [13]. Total parotidectomy involves the resection of both the deep and superficial lobes of the parotid and every attempt is made to preserve the facial nerve. If the facial nerve is involved by the cancer, a radical parotidectomy involving the facial nerve is performed.
Cervical lymph node dissection is advised for clinically obvious neck metastases. Dissection can be functional, modified radical or radical but there is no consensus for the type of the neck dissection [13]. Although there is conflicting data for neck dissection and type; since cervical lymph node metastases seems to be an independent predictor of survival, Nouraei *et al*. recommends routine neck dissection for CXPA cases [14]. Lüers *et al*. argues that neck dissection has both therapeutic and diagnostic meaning in CXPA cases, and only for very small carcinomas with inconspicuous neck metastases, neck dissection may be dispensable [15].
Post-operative radiotherapy is used for high-grade neoplasms, in cases of questionable resection adequacy, and for lymph node and peri-neural invasion to reduce local recurrence [10].
The prognosis depends on pathological subtype of CXPA. It is excellent with complete excision in cases with intracapsular and *in situ* CXPA. Although, a large series on malignant mixed tumors has reported no recurrences or metastasis in intracapsular CXPA; there have been isolated case reports of regional metastasis from these tumors [16].
However, the clinical outcome of invasive CXPA is characterized by frequent local recurrences and distant metastases [3]. In fact, the extent of tumor infiltration beyond the capsule is the most reliable prognostic marker [16]. CXPA metastasizes exclusively as a carcinoma. Distant metastases occur more frequently than regional metastases. Distant metastases seem to show a particular affinity for lung and bone, especially the vertebral column [16]. Other features associated with an unfavorable prognosis include: High tumor grade, large size, soft tissue invasion, perineural invasion, and lymph node metastases [13].

CONCLUSION

CXPA is a carcinoma arising from a pre-existing pleomorphic adenoma. The history of a benign tumor may either be a long-standing one, or characterized by a history of excisions and multiple recurrences.
The treatment of a parotid CXPA consists often of a total parotidectomy. The indication for cervical lymph node dissection and/or adjuvant radiotherapy depends on the presence of unfavorable prognostic factors.
Subtyping CXPA, into non-invasive and invasive categories correlates with prognosis: so that Intracapsular CXPA has a good outcome with very low reported rates of recurrence or regional metastasis.

Compliance with ethical standards

Conflict of interest: The authors stated that there is no conflict of interest.
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