Nasopharyngeal adenoid cystic carcinoma - case report and review of literature

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Case Report

Abstract

Adenoid cystic carcinomas are aggressive epithelial tumors with a tendency for repeated treatment failures. It is characterized by its prolonged clinical course, tendency for perineural spread and multiple local recurrences. It is usually encountered in the major salivary glands. Only a few cases of nasopharyngeal adenoid cystic carcinoma have been reported. In this study, we report a case of nasopharyngeal adenoid cystic carcinoma treated with radiation therapy with extensive review of literature.

Keywords: Adenoid Cystic Carcinoma; Nasopharynx; Radiation

Introduction

Adenoid cystic carcinoma (ACC), previously termed “cylindroma” by Bilroth in 1856, is an uncommon epithelial malignant tumor accounting for less than 1% of all head and neck malignancies. It is characterized by its prolonged clinical course, tendency for perineural spread and multiple local recurrences.¹,² Nasopharynx is a rare location for this tumor and accounts for less than 4% of all head and neck adenoid cystic carcinomas.³ Owing to the paucity of cases of adenoid cystic carcinoma in the nasopharynx, information regarding appropriate therapy for this tumor is limited.

In this paper, we report a case of adenoid cystic carcinoma arising from the nasopharynx along with available review of literature.

Case presentation

A sixty two year old female presented with complaints of nasal stuffiness and chronic headache that gradually progressed over 8 months. She also gave history of right sided ear ache and decreased vision since two months. Examination revealed drooping of left eye lid, miosis of left pupil with complete loss of vision with restriction of eye movements in the left eye. There was proptosis of right eye with minimal restriction of movements but visual acuity was normal. Neurological examination showed paralysis of III, IV and VI cranial nerve with paresthesia of left side of the face along the second division of trigeminal nerve. Flexible endoscopic examination revealed mucosal thickening in the right fossa of rosenmuller and roof of nasopharynx. Magnetic resonance imaging revealed mucosal thickening in the right fossa of rosenmuller and roof of nasopharynx. Magnetic resonance imaging with contrast revealed a T1/T2 isointense mass involving the roof and left side of nasopharynx measuring 2.4×2.2×1.6 cm with extension to left petrous apex, posterior aspect of sphenoid, cavernous sinus and meckel’s cave on the left side (Figure 1).

Biopsy from nasopharyngeal mass showed malignant epithelial tumor with nests, islands and cribriform structures composed of mildly pleomorphic, round to oval tumor cells with high nucleo-cytoplasmic ratio, hyperchromatic nuclei with barely perceptible cytoplasm (Figure 2). Perineural
invasion was observed. Immunohistochemistry revealed tumor cells positive for SMA, S-100, Pan-CK and CD117 with Ki-67of 40% (Figure 3, 4). The histopathological examination and immunohistochemistry was consistent with the diagnosis of adenoid cystic carcinoma.

[18]-Fluorodeoxyglucose PET-CT scan was done, which showed a FDG avid asymmetric soft tissue thickening in the roof and lateral wall of nasopharynx with destruction of apex of left temporal bone and erosion of left side of clivus with involvement of carotid canal and foramen ovale. There was no evidence of distant metastasis. In view of poor general condition and advanced tumor stage, patient was treated with palliative radiation therapy to a dose of 30 Gray in 10 fractions using conventional technique. Patient is now post treatment six months and has achieved good palliation of symptoms.

**Review of literature**

Nasopharyngeal adenoid cystic carcinomas present both diagnostic and treatment challenges because of the limitations of knowledge and experience for this neoplasm. Its incidence is very rare, constituting 0.48% of all nasopharyngeal carcinomas with a peak incidence in the fifth and sixth decade with a female preponderance of 1.3:1.4,5,6 These tumors have a long natural history characterized by a typical slow growth rate responsible for the delay in seeking early medical consultation. The interval between onset of the disease and onset of the first symptoms is estimated to be between 2 and 5 years.5,7 The symptoms most commonly found are epistaxis, progressive nasal stenosis, dysfunction of the eustachian tube and in relation to the invasion of the skull base, disorders of ocular motility, diplopia, facial pain, dysfunction of IX, X, XI and XII pairs of cranial nerves and more rarely Horner’s syndrome.5,7

Imaging of ACC is based on computed tomography scan, particularly helpful in detecting bony erosions of the skull base, and on Magnetic Resonance Imaging with gadolinium, effective in demonstrating possible involvement of infra-temporal fossa, cavernous sinus, and perineural or perivascular infiltration. The reported incidence of invasion of the skull base ranges from 4% to 22% and can realize through various ways of spread: the peritubaric space, the branches of the trigeminal nerve and the internal carotid artery.9,11

The histology of the tumor is interesting and characteristic. ACC appears as a “classic Swiss cheese”, with uniform small round cells around the central cylinders and lamina, containing mucoid and hyaline material. Three subtypes have been described by Perzin et al. in 1978, reflecting various degrees of progression of cellular differentiation, as well as aggressiveness of biologic behavior.12 The tubular subtype, which is the most differentiated form and the 2nd most frequent (30%), presents a recurrence rate more than 50% and an overall 9-year survival. The cribriform subtype, which is less differentiated than the tubular and the most common (50%) for most authors, presents a 90% recurrence and an 8-year overall survival. Cribriform and tubular subtypes manifest a tendency for local infiltration. The less differentiated and thus the most malignant and aggressive is the solid subtype, accounting for 10% of the cases. It often gives distant metastases (70% overall) and mainly invades lung, brain and bones and has by far the poorest prognosis.
The nasopharyngeal ACC is locally aggressive and thus prone to recurrence. These tumors are located in proximity to the critical neurovascular structures, have a tendency to locally involve the internal carotid artery, and cranial nerves III, IV, and V, invade the cavernous sinus, and erode through the skull base. As mentioned above, it is the tumor’s tendency to invade the nerves and to propagate perineurally. In some cases, skip involvement can be seen along the perineural space.13-14 Hence, treatment of ACCs of the nasopharynx presents a serious therapeutic challenge in most cases. Lymph node metastases are rarer (15%). The presence of distant metastases is possible in 39% of the patients. Lungs and bones are the most common sites of distant metastases.3

The best treatment for ACC is radical surgical resection followed by radiotherapy. Because of the low nodal metastasis rate in ACC, most investigators have recommended local excision alone without neck dissection in patients with a node-negative neck, and prophylactic radiation of the neck has been considered unnecessary. In cases of nasopharyngeal ACC, the frequent perineural and perivascular infiltrations, associated with the anatomical characteristics of the nasopharynx, however, make the surgical approach risky.9 Radical surgical resection of nasopharyngeal tumors is a complex otolaryngological and neurosurgical challenge and may be associated with significant morbidity and mortality. Another aspect to be taken into consideration is that surgical treatment of these neoplasms with extension to the skull base is associated with a significant morbidity rate, due to the frequent appearance of sequelas and complications, due to vascular and nervous lesions.7, 8, 15-18 In the case of ACC with intracranial extension, it, therefore, appears important to evaluate the real benefits of surgery, also considering that this pathological condition has a slow clinical progression which allows long-term survival of many patients, even with advanced or metastatic disease. In majority of patients, the role of surgery is restricted to obtaining a biopsy.

Although the surgical approach with attempts of oncological radicality, followed by radiotherapy (RT), remains the treatment of choice for ACC, exclusive radiotherapy, in those cases in which surgery is contraindicated, for general reasons or for technical difficulties, offers a valid therapeutic alternative guaranteeing good control of the disease.19

RT approach is similarly challenging owing to the numerous radiosensitive structures in the head and neck region, and doses from 60 to 70 Gy should be achieved in macroscopic tumors. Vikram et al mark regression of the tumoral mass in 96% of 49 patients treated only with radiotherapy, although in 93% of the cases they observed recurrence of the disease within 5 years.20 Initial results using intensity-modulated radiation therapy have shown an improvement of local tumor control rates in patients with complex ACCs of the head and neck.21 Neutron radiotherapy is applied in the nasopharyngeal ACC, because of its high local control rate for a long period of time (100% at 5-years).22 Recent data has indicated a promising local control rate of 93% at five years with the use of high-dose conformal proton beam radiotherapy.23 The use of the gamma knife has been recommended for use with a median radiotherapy dose of 15 Gy.24

Chemotherapy has a limited role in the ACC of the nasopharynx and its use is still a matter of discussion. Cisplatin, 5-Fluorouracil, Doxorubicin and others are used in combination with radiotherapy, with reports of some success and remissions. Recent studies suggest Imatinib mesylate, a potent inhibitor of c-kit tyrosine kinase, may be an effective systemic treatment for metastatic and unresectable disease.25

Despite local aggressive therapy, the majority of patients (60%) will develop recurrent disease. Approximately 50% of recurrences are clinically evident within 2 years after surgery and radiotherapy. Prognosis of ACC depends upon histologic subtypes, presence of tumor at the surgical margins, anatomic site, and metastases.26

**Conclusion**

Nasopharyngeal ACC is a rare tumor characterized by its tendency for local recurrence, perineural spread and distant metastases but with a relatively long survival even in the presence of metastases. The combination of surgery and radiotherapy gives the best survival results while the role of chemotherapy being still in controversy.

**Conflict of interest**

The authors declare that they have no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

**References**


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