



Case Report

Chondroma in the hypoglossal canal: A case report

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ABSTRACT

Background: Intracranial chondromas are rare tumors arising from the skull base. They are usually accompanied by functional impairments of some cranial nerves. However, hypoglossal nerve dysfunction is rare.

Case Description: We report on a 57-year-old woman presenting with chondroma of the right hypoglossal canal leading to right hypoglossal nerve palsy.

Conclusions: This report suggests that chondroma should be considered as a differential diagnosis in cases of hypoglossal lesions.

Keywords: Chondroma, hypoglossal canal, hypoglossal nerve palsy, skull base

INTRODUCTION

Intracranial chondromas, rare tumors accounting for 0.1%–0.2% of all intracranial tumors,^[3] arise from synchondrosis at the skull base and are located at the middle cranial fossa.^[10] However, intracranial chondromas originating from the dura mater, brain parenchyma, and ventricles have also been reported.^[4] Due to slow tumor growth, lesions are often widespread when diagnosed.^[9] The common clinical presentation includes deficits in cranial nerve function, including that of the optic, oculomotor, abducent, acoustic-facial, and lower cranial nerves; however, hypoglossal nerve impairment is rare.^[12] Here, we report a case of chondroma arising from the petrooccipital synchondrosis causing hypoglossal nerve palsy.

CASE REPORT

A 57-year-old woman presented with difficulty in swallowing that progressed over 6 months. No neurological deficits other than right hypoglossal nerve palsy were detected on physical examination. She had a history of successfully treated breast cancer. The patient provided informed consent.

Computed tomography (CT) revealed skull base erosion from the right hypoglossal canal to the anterior part of the foramen magnum [Figure 1a]. Magnetic resonance imaging (MRI) revealed a cystic mass lesion in the right hypoglossal canal with high intensity on T2-weighted and FLAIR images, and iso-

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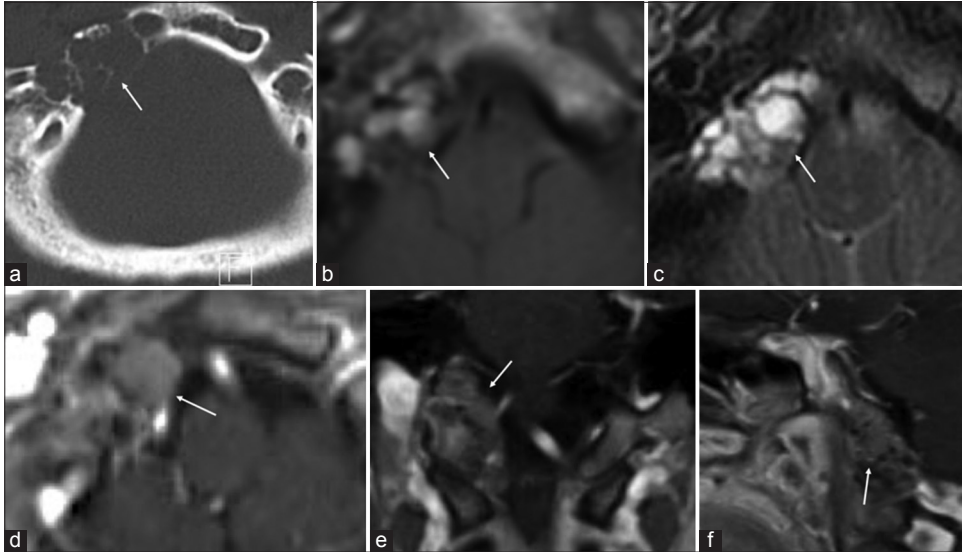


Figure 1: (a) Axial computed tomography showing erosion in the right hypoglossal canal. (b and c) Axial T1- and T2-weighted images showed cystic lesion. (d-f) Gd-diethylenetriaminepentaacetic acid enhanced images showed mild contrast effect.

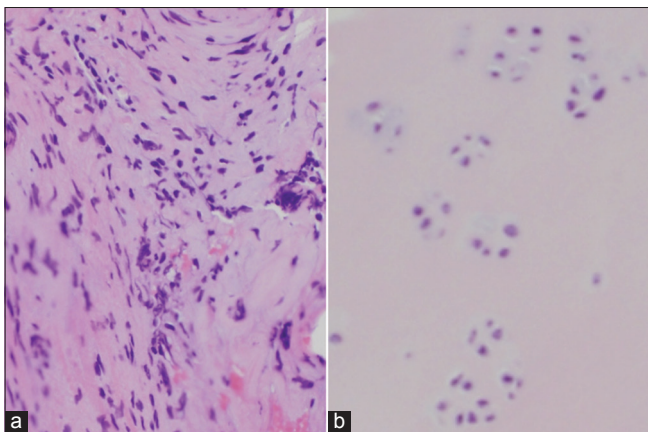


Figure 2: (a and b) Hematoxylin and eosin staining showing mature hyaline cartilage with well-differentiated chondrocytes.

low intensity on T1-weighted and diffusion-weighted images [Figure 1b and c]. Gd-diethylenetriaminepentaacetate-enhanced images showed irregular high intensity at the lesion periphery [Figure 1d-f]. A cerebral angiogram revealed no tumor stain or other abnormalities. Positron emission tomography (PET)-CT revealed no lesion uptake. Preoperatively, we considered schwannoma, chordoma, and breast cancer metastasis in addition to chondroma as differential diagnoses.

The patient underwent tumor removal through the transcondylar approach using image-guided navigation; a gray mass lesion was encountered in the hypoglossal canal, with part of the tumor progressing into the dura. Motor-evoked potentials of the hypoglossal nerve decreased during tumor debulking, resulting in the subtotal resection.

Microscopic examination revealed a cartilaginous hyaline matrix and well-differentiated regular shaped cells with a clear

cytoplasmic halo [Figure 2a], and no mitotic or pleomorphic cells existed [Figure 2b]. With the results of immunohistochemistry, chondroma was diagnosed.

Postoperatively, the patient had no complications and did not receive radiation therapy due to the absence of pathological malignancy. MRI showed no regrowth a year after surgery.

DISCUSSION

Intracranial chondromas, first reported by Hirshfield in 1851,^[5] are benign tumors that must be distinguished from skull base tumors. Weindling *et al.* presented an algorithm for image discrimination of hypoglossal canal lesions.^[11] Since most schwannomas in the hypoglossal canal appear as cystic lesions on contrast imaging, distinguishing between chondromas with cystic lesions and schwannomas is difficult, as in this case. For prognostication, it is important to distinguish chondromas from chordomas and metastasized tumors. Chordomas often occur near the midline of the cranial base; however, Alharbi *et al.* reported a chordoma occurring in the hypoglossal canal;^[1] therefore, preoperative imaging is important. Chordomas have a higher ADC value on diffusion-weighted imaging than do chondromas,^[3] but chondromas show high intake on PET.^[6] For metastatic bone tumors, PET-CT is useful for detecting lesions, but careful evaluation is required in cases of skull base lesions.^[7] Since our patient's breast cancer was well-controlled and no other bone metastatic lesions were detected, we excluded the possibility of bone metastasis preoperatively.

The standard treatment for chondromas and chondrosarcomas is complete surgical removal. However, total resection is difficult due to the deep location of the tumor or invasion toward the cranial nerves and critical vascular structures. Postoperative radiation treatment is controversial,^[8] but radiation therapy, especially

proton-beam, has been effective in cases of residual tumors and pathological atypicality.^[2] In this case, there was no pathological malignancy, but follow-up observation was necessary.

CONCLUSIONS

We reported a case of chondroma in the hypoglossal canal. For understanding prognosis and selecting treatment strategies, it is important to distinguish these from other diseases. Chondroma and chondrosarcoma should be considered as differential diagnoses of hypoglossal canal tumors. Furthermore, a partially resected chondroma should be followed-up even if it is benign.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient has given her consent for her images and other clinical information to be reported in the journal. The patient understand that her name and initial will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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