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Osteochondroma of Occipital Bone Projecting into Foramen Magnum, A Rare Site for a Common Tumor-A Case Report

Case Report

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Abstract

A 15 year old male with no comorbidities presented with complaints of electric shock like sensation in nape of the neck associated with dizziness, involuntary movement in right upper limb and occasional headache presented to neurology department. On investigations, osteochondroma arising from occipital bone was diagnosedwhich was projecting into foramen magnum causing severe compression of spinal cord. Only one such case has been described previously in literature. The patient was successfully treated with surgery and had relief of symptoms on follow up.

Keywords: Osteochondroma, Occipital bone, Foramen magnum, Spinal cord compression

Introduction

The appearance of an osteochondroma in the form of an intracranial tumour is a very rare phenomenon. These tumours show a predilection for the base of the skull, probably due to the presence of numerous synchondroses there [1]. Although intracranial osteochondromas are known to cause neurological deficits, intracranial osteochondromas with neurological deficits are very rare and the literature contains only sporadic case reports. Osteochondromas are benign, cartilage-covered bone tumours that protrude from the outer surface of the bone and contain a medullary cavity that is continuous with the underlying bone [2]. These tumours grow slowly and malignant transformation is rare; however, they can affect local structures such as nerves, blood vessels or tendons and sometimes cause cosmetic problems. Osteochondromas are true tumours arising from endochondral ossification during skeletal development, usually in the metaphyseal regions of long bones. Continued growth of the lesion results in subperiosteal bone growth with a cartilaginous cap protruding from the bone surface. The bony prominence of an osteochondroma, whether sessile or pedunculated, merges into the underlying bony cortex and medullary cavity [3].

Case Presentation

A 15 year old male with no comorbidities presented with complaints of electric shock like sensation in nape of the neck associated with dizziness, involuntary movement in right upper limb and occasional headache since 20 days. There was no history of vomiting, limb weakness, altered bowel/bladder habits or any trauma. On examination, GCS was E4V5M6 and there were no deficits, nerve palsies or cerebellar signs. All the routine investigations were within normal limits.

A non-contrast CT scan of patient's head showed a bony projection along posterior aspect of foramen magnum protruding into the spinal canal, which was given as osteochondroma (Figure 1).

MRI of brain demonstrated a 3.8cm x 1.3cm pedunculated bony outgrowth from occipital bone causing compression at foramen magnum with altered signal intensity in spinal cord (Figure 2 and 3).

A Multidisciplinary team decision was made to excise the mass. Intraoperatively a bony lesion arising from the posterior part of foramen magnum rim was identified and drilled out and sent for histopathological examination. The post-op period was uneventful. On follow up, patient had relief of symptoms with complains of occasional headache.

Histopathology report demonstrated an osteogenic lesion with a hyaline cartilaginous cap. The lesion was composed of lamellar bone with fatty intertrabecular marrow spaces. No evidence of malignancy was noted. Overall features were suggestive of an osteochondroma.

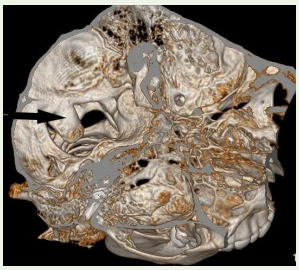

Figure 1: 3D reconstruction of head CT scan at the level of formane magnum (superior view) shows a bony projection along posterior aspect of foramen magnum protruding into the spinal canal.(black arrow).

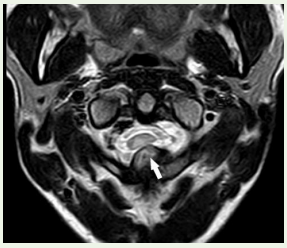

Figure 2: Axial T2W MRI image shows a bony outgrowth projecting into the foramen magnum and causing severe compression of spinal cord with resultant hyperintense signal in cord. (white arrow).

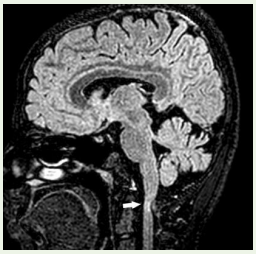

Figure 3: Sagittal FLAIR MRI image shows severe compression of spinal cord at the level of craniovertebral junction with altered signal in cord. (white arrow).

Discussion

Osteochondromas are not true neoplasms, rather they are developmental lesions and hence also called as osteocartiagenous exostosis. Osteochondroma is the most common tumour of the bone, and it occurs mostly in the epiphysis of the long bones. The key feature of osteochondromas is that they are in continuity with the parent bony cortex and medullary canal. They can be sessile or pedunculated and typical feature is that they grow away from the epiphyses of the parent bone. A cartilaginous hyaline cap is present which if grows more than 1.5 cm in thickness suggest malignant transformation. Malignant transformation is a rare complication and occurs only in about 1% of patients with solitary osteochondroma.Although osteochondromas are the most common benign tumour of skeletal bones, they are rare in the skull and the incidence of intracranial osteochondromas ranges from 0.1% to 0.2% of all intracranial tumours [4,5]. It is possible that the true incidence of cranial osteochondromas is underrepresented due to their often asymptomatic nature. An osteochondroma can become symptomatic from mechanical irritation of the cranial nerves, soft tissue, or vascular compression, trauma, or fracture [6]. As in the case described, the presence of a tumour in the foramen magnum can be recognized immediately on the basis of neurological symptoms.

Osteochondromas can be single or multiple; The latter is associated with an autosomal dominant inherited syndrome called hereditary multiple exostosis (HME). HME demonstrates almost complete penetrance especially in males and are mostly diagnosed in early childhood by the age of 10-12 years. In addition to cosmetic deformities, features such as fractures, vascular involvement, neurological sequelae, overlying bursa and malignant changes are rarely observed [7].

Osteochondromas rarely arise in the skull and very few cases have been reported. Only sporadic case reports of skull base osteochondroma are available in literature. Most of these osteochondromas presented with cranial nerve palsies. However, in our case the osteochondroma arising from occipital bone was causing compression at cervicomedullary junction. We could find only 1 case of basi-occiput osteochondroma growing into foramen magnum similar to our case.In this case the patient presented with gradual gait difficulty,weakness of all the limbs and persistent dull pain in the occipitocervical region [8].

Other bone lesions to consider in the differential diagnosis include meningiomas, monostotic fibrous dysplasia, osteomas, osteoblastomas, osteoblastic metastases, giant cell tumours, and eosinophilic granulomas.

Surgical resection is the only treatment for these lesions and is recommended in patients with symptomas related to osteochondroma or in patients in whom malignant transformation is suspected [9].

Conclusion

Osteochondromas are the most common benign bone tumours, but are extremely rare in the skull. Although osteochondromas rarely become malignant and are usually asymptomatic, they should be included in the differential diagnosis of skull tumours. Comprehensive imaging, including CT and MRI, along with histopathological

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evaluation is essential for accurate diagnosis and optimal patient management. Despite potentially catastrophic symptoms, these tumours are pathologically benign and complete resection often results in a long-term cure.

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