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INTRA CRANIAL LIPOMA: A CASE REPORT WITH LITERATURE REVIEW

Pathology

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ABSTRACT

Lipomas though very common tumor elsewhere in body are very rare occurrence in CNS. Seen incidentally, usually are asymptomatic and often detected on imaging for other unrelated causes and as such do not require any treatment. Symptomatic and doubtful cases require treatment in the form of excision. In this case report we present a similar patient with intracallosal lipoma who was treated by excision.

KEYWORDS

Lipoma, intracranial, corpus callosum

INTRODUCTION

Intracranial lipomas are extremely rare of all primary brain neoplasm.1Pericallosal lipomas which constitute the commonest variety of intracranial lipomas(45%) , are frequently associated with varying degree of dysgenesis of corpus callosum.2 Symptomatic and doubtful cases require treatment in the form of excision. In this case report we present a similar patient with intracallosal lipoma who was treated by excision.

CASE REPORT

A 3 years old male patient admitted in neurosurgery department, NIMS hospital, Jaipur on 2023 with complaints of intermittent episodes of seizures after fever since last one year, all vital parameters were normal. Neurological and systemic examination was normal. Blood analysis was within normal limits. No any other developmental anomalies.

Gadolinium enhanced MRI Scan shows agenesis of corpus callosum with evidence of tubulo-nodular pericallosal lipoma predominantly hyperintense on T2 and T1W1 in the region of anterior part of body of corpus callosum, no abnormal contrast uptake seen. Evidence of colpocephaly is seen.

As per the record subtotal excision through interhemispheric approach was done for this patient, postoperative course of the patient was uneventful and patient improved symptomatically and was discharged on 9th post-op day on oral medications.

Histopathological examination grossly shows several grey white soft tissue pieces collectively measures 2x2 cms, microscopically sections revealed mature adipose tissue with areas of marked calcification with adjacent brain parenchyma also show calcification. Overall morphology is consistent with corpus callosal lipoma.

Post op CT scan was done suggestive of postoperative changes with perilesional oedema with no midline shift to left mass effect. No evidence of hematoma.

DISCUSSION

Intracranial lipomas are extremely rare, comprising 0.1% to 0.5% of all primary brain neoplasm.[1] Pericallosal lipomas which constitute the commonest variety of intracranial lipomas (45%), are frequently associated with varying degree of dysgenesis of corpus callosum. 2 The remainder of the lesions are clustered in the quadrigeminal/ superior cerebellar (25%), suprasellar/interpeduncular (14%), cerebellopontine angle (9%), and sylvian (5%) cisterns.[2]

Yildiz H et al retrospectively reviewed intracranial locations of the lipomas. Their locations were 8 quadrigeminal cistern, 1 interpeduncular cistern, 3 sylvian fissure 3 interhemispheric fissure , 2 choroid plexus , 3 intercerebellar fissure , 1 corpus fornicis and 4 at the periphery of the corpus callosum . Eighteen of the intracranial lipomas were tubulonodular; six were curvilinear. Associated anomalies were observed in six patients. All of the patients with sylvian fissure lipoma had seizures. The two preferential sites of intracranial lipomas were pericallosal and dorsal mesencephalic.[3]

Niwa T et al analyzed MRI findings of three infants with an interhemispheric lipoma, associated with a callosal anomaly, and MCD. They found, two infants with nodular interhemispheric lipoma, agenesis of the corpus callosum, and polymicrogyria, and one infant with interhemispheric curvilinear lipoma, hypoplasia of the corpus callosum, and heterotopias. Findings of Niwa T also support association regarding the occurrence of these malformations same as our case. [4]

The exact etiology of intracranial lipomas is now unwinded. Historically, theories regarding the histogenesis of these lesions include: a) hypertrophy from pre-existing fatty tissue of the meninges, b) metaplastic meningeal connective tissue, c) heterotopic malformation of dermal origin, and d) tumor-like malformation derived from primitive meninx. Now intracranial lipomas are accepted to be due to the abnormal differentiation of the persistent meninx primitiva, which is a region that constitutes the inner level of the pia, arachnoid, and dura.

According to Gerber et al, fifty percent of patients with intracranial lipomas are asymptomatic5.Typical clinical manifestations include seizures and headache. Gastaut et al analyzed four cases of lipoma of corpus callosum with epilepsy and also reviewed the literature about the pathogenesis of epilepsy in these type of cases. They concluded that epilepsy is a constant feature and begins before the age of 15 and the reason behind seizures might be due to interhemispheric disconnection6. Other manifestations are hydrocephalus due to raised intracranial pressure 7 , behavioral anomalies 8.

Intracranial lipoma is commonly seen in the pediatric and young adult population, either incidentally on neuroimaging or due to the symptoms they elicit which led to imaging studies. In older patients, intracranial lipomas are often found incidentally at autopsy. Radiographically, a lipoma of the corpus callosum is easily identified on plain skull films. Specifically, a radiolucent zone, which corresponds to the fatty tumor, is surrounded by curvilinear calcifications5. On CT scan the mass appears smoothly demarcated and hypodense with density of 50 to 100 negative HU9. It is often marginated by nodular or curvilinear calcification. MRI demonstrates a homogenous hyperintense mass on T1 weighted images and an iso- to hypointense lesion on T2 weighted images 10,11. In addition, CT scans and MRI are helpful in identifying other associated malformations11.

As in literature, Imaging is the main stay in the diagnosis of intracranial lipomas. Some differential diagnosis of corpus callosal lipoma still considered based on MRI findings. According to A. Prof frank Gaillard et al , differential is essentially that of masses which contain fat , and therefore includes- Intracranial dermoid . If it is ruptured will often have multiple droplets scattered through the subarachnoid space, usually midline. Other differentials are intracranial teratoma and lipomatous transformation of neoplasm like PNET, ependymoma, glioma. ON MRI, if no saturated sequences are available then a number of other possibilities may be kept which also have high T1 signal eg. thrombosed berry aneurysm and white epidermoid.12 Some of these could be only differentiated by histopathological examination of concerned tissue.

Macroscopically intracranial lipoma can vary from infracentimetric to large masses. They have a collagenous capsule adherent to the cerebral parenchyma.

Microscopically it is composed of typical adipose tissue and a capsule with variable quantity of collagen fibres which can penetrate the

cerebral parenchyma in association with blood vessels. Calcifications can occur within the lipoma, its capsule and adjacent cerebral tissue. Due to these characteristics surgical removal is often unfeasible and conservative treatment assumes a major role controlling seizures.[13]

CONCLUSION

Intracranial lipomas are rare, generally asymptomatic and usually a radiological or autopsy find. They can be associated with seizures and a variety of clinical manifestations depending on their size and location. This case-report is an example of voluminous lipoma as the cause of a convulsive seizure with agenesis of corpus callosum. this case is diagnosed by CT, MRI and confirmed by histopathological examination. After removal of tumor, patient is asymptomatic, and till now no episode of seizure.

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