Lipoma of Sylvian Fissure: Simple Pathology in Complex Location

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Abstract

Background: Lipoma of Sylvian fissure is a rare lesion. When seizure is intractable surgical excision is indicated. Here we are presenting a case of Sylvian fissure lipoma and the surgical difficulties encountered along with the review of literature.

Case Description: Refractory seizure in a 28 year old male was evaluated. Head computed tomography revealed hypodense lesion of fat attenuation in right Sylvian fissure. On magnetic resonance imaging lesion was hyperintense on both T1 and T2 weighted images with complete suppression on T1 weighted fat suppressed image. Radiological impression was that of lipoma. Standard right pterional craniotomy was performed. Lesion was seen in the Sylvian fissure splaying the inferior frontal gyrus and superior temporal gyrus. Major vessels were seen traversing the lesion. With meticulous dissection near total excision of the lesion was done. Frozen and final histopathological examination was confirmative of lipoma. There was minimal residual lesion seen as calcification on imaging. Post operatively patient was followed up for 6 months with decrease in seizure frequency without any deficit.

Conclusion: Our case report and literature supports the fact that the surgical excision of Sylvian fissure lipoma is extremely difficult and no attempt should be made for complete excision of the lesion. Even now in the era of microsurgery, Sylvian fissure should always be dealt cautiously.

Keywords: Lipoma; Seizure; Sylvian Fissure; Tumor; Intracranial Benign Lesions; Epilepsy; Microneurosurgery

Introduction

Lipoma of brain is uncommon lesion accounting to 0.1 to 0.7% of all intracranial brain tumours [1,2,4]. Lipoma of Sylvian fissure is much more uncommon [1,2]. Given the rare incidence, there is no definite management guideline for Sylvian fissure lipoma. They usually present with seizure, hydrocephalus or incidental detection for evaluation of headache [3]. Surgical excision in indicated when there is a diagnostic dilemma or when seizure is uncontrolled. Complete surgical excision is difficult due to the fibrous nature of the lesion and traversing branches of middle cerebral artery [4]. Here we are presenting a case of Sylvian fissure lipoma and the surgical difficulties encountered along with the review of literature.

Case Report

28 year old male patient without any comorbidities presented with complaint of focal to bilateral tonic clonic seizure, since 4 years not controlled with anti-epileptic medications. Patient was on carbamazepine and clobazam at optimal doses. He persistently had seizure at frequency of 2-3/month. On examination patient had no deficits. Computed tomography brain showed hypodense lesion of fat attenuation measuring 22 X 31 X 25 mm in infero medial aspect of right temporal lobe (Figure 1). Concentric calcification was present. There was no contrast enhancement. On magnetic resonance imaging lesion was hyper on both T1 and T2 weighted images with complete suppression on T1 fat suppressed image (Figure 2). There was no diffusion restriction. No hydrocephalus. Electroencephalogram was normal.
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Result

In view of refractory seizures and for the confirmation of histological diagnosis patient was planned for right pterional craniotomy and decompression of the lesion. Standard right pterional craniotomy was performed. Lesion was seen in the Sylvian fissure splaying the inferior frontal gyrus and superior temporal gyrus (Figure 3). Lesion was firm, fibrous, yellowish, minimally suckable. Major vessels were seen traversing the lesion (Figure 4 and 5). With meticulous dissection near total excision of the lesion was done. Frozen and final histopathological examination confirmed it to be lipoma. Post-operative scan didn’t show any infarct. There was minimal residual lesion evident as calcification on imaging (Figure 6). Post operatively patient was followed up for 6 months with decrease in seizure frequency without any deficit. Follow up imaging didn’t show any increase in size of the lesion (Figure 7). Patient is planned for further follow up and gradual reduction of anti-epileptic drugs.

Figure 3

Figure 4

Figure 5

Figure 6
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Discussion

Intracranial lipomas are rare lesions with incidence quoted in literature between 0.1 to 0.7% of all intracranial tumors [1,2,5]. The incidence of Sylvian fissure lipoma is 3.5 to 5% of all intracranial lipoma [4]. Given the low incidence of Sylvian fissure lipoma there is no definitive management guidelines. For proper management of these lesions understanding of the development is important.

Intracranial lipoma are considered as benign lesions developed from a malformation. They are thought to be derived from meninx primitive maldevelopment [6,7]. Meninx primitive is a mesenchymal derivative of the neural crest which forms subarachnoid cisterns. It is usually resorbed during embryogenesis [4]. Lipoma occur where there is a problem of dissolution especially near cisterns. The Sylvian fissure is the first sulcus to appear (16 - 20 weeks of gestation) [8]. Redundant meninx primitive can be found here as it is a neural tube flexion site and is close to Sylvian cistern. Therefore, a lipoma may develop in Sylvian fissure. Hence in adult lipoma, we can see important vessels traversing the lesion in approximately 36% of cases [8].

Varying degrees of associated brain malformations are seen with it. Histology often shows mature adipose tissue with incorporated nerve fascicles, arteries and veins [9,10]. The presence of traversing vessels makes the excision of these lesions difficult.

When symptomatic the lipoma of Sylvian fissure usually present with seizure. This is due to irritation of mesial temporal cortex. The origin of seizure in these lesions remain undetermined. A variety of neocortical factors may be responsible given the high incidence of associated malformations. Most of the lesions are detected while evaluating patients for epilepsy [4,9,11]. Seizure well controlled with anti epileptic medication is an indication for conservative management [1]. Bokhari., et al and Fathi., et al. have managed a symptomatic lesion with adequate anti-epileptic regimen [12,15]. But some authors quote improvement in seizure even with partial resection. Feldman., et al. in their case report on Sylvian fissure lipoma for epilepsy, quote complete seizure freedom after partial resection [4]. The mechanism with which seizure gets controlled is not clearly known.

Excision of Sylvian fissure lipoma is challenging due to the vital structures passing through it. Hence it is important to make correct diagnosis of lipoma pre operatively. The main difficulty is differentiating lipoma from dermoid on imaging. On Computed tomography scan of brain, both lesions are hypodense without contrast enhancement. Calcification may be present in both. A dermoid will demonstrate a Hounsfield unit range from - 20 to - 40 Hounsfield unit, whereas lipomas, due to their relatively high lipid content, will demonstrate a range of - 50 hounsfield unit to less than - 100 hounsfield unit [13].

Magnetic resonance imaging characteristics of lipoma are that they are hyper on T1 weighted imaging and hypo on T2 weighted imaging. T2 weighted images with flow voids indicates presence of vessels in the lesion. The homogeneity of the lesion suggests that neither desquamated epithelium nor other tissue elements are present. This will help in ruling out dermoid cysts and teratomas which appear heterogenous on T1 weighted, T2 weighted and Fluid attenuation inversion recovery images [14].

The indications for operating Sylvian fissure lipoma are symptomatic uncontrolled seizure and when there is a diagnostic difficulty [1,4,8,15]. Complete excision of lipoma is difficult as major branches of middle cerebral artery traverse the lesion. The lesion will also be adherent to the surrounding structures. This is due to embryological development of these lesions close to the middle cerebral artery branches. As in our case with great difficulty near total excision of the lesion was done. Feldam., et al. in their case report on Sylvian fissure lipoma have quoted that complete surgical excision will be difficult [4]. In a review article by Shao Ching., et al. on operated patients of Sylvian fissure lipoma, out of 9 patients, in only 2 patients complete surgical excision was possible [1]. As said earlier seizure improvement even with partial excision are reported. Hence attempt to completely remove the lesion should not be done. Various studies comparing the seizure outcome after surgical excision suggests that even partial excision has good outcome (Table 1).

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<table>
<thead>
<tr>
<th>Author</th>
<th>Number of patient</th>
<th>Presentation</th>
<th>Surgery</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mauiri., et al. [2]</td>
<td>1</td>
<td>Generalised tonic clonic seizure</td>
<td>Biopsy</td>
<td>Controlled with AED</td>
</tr>
<tr>
<td>Sarioglu., et al. [9]</td>
<td>1</td>
<td>Uncinate fits</td>
<td>Total resection</td>
<td>Improved</td>
</tr>
<tr>
<td>Feldam., et al. [4]</td>
<td>1</td>
<td>Tonic clonic seizure</td>
<td>Partial resection</td>
<td>Seizure free</td>
</tr>
<tr>
<td>Shao ching., et al. [1]</td>
<td>1</td>
<td>Headache</td>
<td>Excision (Total)</td>
<td>Improved</td>
</tr>
<tr>
<td>Fatih Bayrakli., et al. [15]</td>
<td>1</td>
<td>Tonic clonic seizure</td>
<td>Not operated</td>
<td>Managed medically</td>
</tr>
<tr>
<td>This study</td>
<td>1</td>
<td>Partial seizure with secondary generalisation</td>
<td>Near total resection</td>
<td>Improved</td>
</tr>
</tbody>
</table>

Table 1

At all possible times symptomatic lesions with seizures should be managed with anti-epileptic drugs. Surgery is indicated only when there is a diagnostic dilemma or when seizure is uncontrolled. For former, it is better to stop surgery at biopsy and for the latter partial excision may benefit the patient rather than complete excision.

Conclusion

Intracranial lipoma are rare lesions with imaging characteristics, similar to dermoid tumor. Literature and our case supports the fact that the surgical excision of these lesions are extremely difficult and no attempt should be made for complete excision of the lesion. Due to the surgical difficulty every attempt should be made to diagnose these lesion pre-operatively. For patients presenting with uncontrolled seizure with significant seizure burden even a partial excision is sufficient to reduce the seizure burden. This fact is supported in previous literature. For lesions which are operated for diagnostic dilemma surgical excision should stop at biopsy. Therefore, it should be kept in mind that even in this era of microsurgery Sylvian fissure lipoma are commendable lesions and should always be dealt cautiously.

Bibliography

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