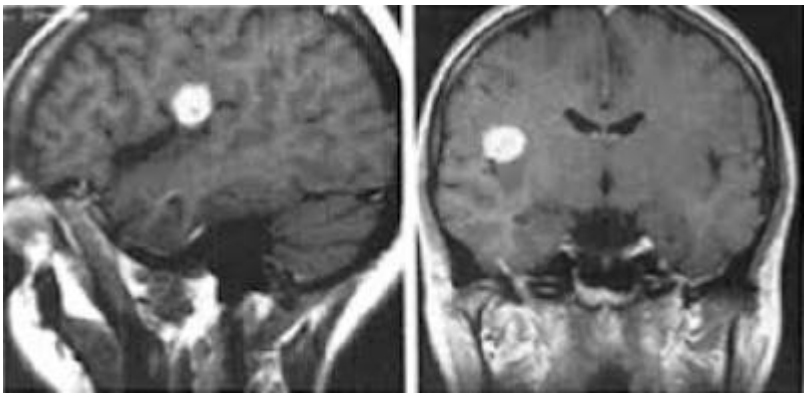
Sylvian fissure meningioma without dural attachment



Sylvian fissure meningiomas (SFMs) represent a rare subgroup of nondural-based tumors arising from the meningothelial cells within the arachnoid of the Sylvian fissure.

In 1938 Harvey Williams Cushing and Louise Eisenhardt reported two cases of this type of tumor named as “Deep Sylvian Meningiomas” [1].

Epidemiology

The reported adult SFMs patients are young (mean age of 34.95 ± 3.35 years; 95% CI [27.93–41.97]) with a M:F ratio of 1.22 (11/9) and in the pediatric population (mean age is 5.71 ± 1.61 years; 95% CI [1.76-9.66]; the M:F ratio is 2:1 (4/2 and 1 unknown). When comparing grade I and grade II lesions, there is no significant differences in terms of mean age (grade I: 26.87 ± 3.90 years; vs grade II 24.33 ± 7.01 years; t-test p > 0.05), gender (grade I M:F ratio – 1.2 [12/10] versus grade II M:F ratio – 5 [5/1)]), clinical presentation (seizures is the most common presentation in both groups – grade 1 – 74% (17/23) and grade II – 67% (4/6)] and extent of resection (total resection in grade 1 – 65% [1/23] and total resection in grade II – 50% [3/6].

Only six atypical WHO grade II SFMs have been previously described [2].

Clinical features

They usually manifest with seizures and display the same radiological features of meningiomas in other locations.

Differential diagnosis

SFMs are rare entities and it is important to differentiate them from the sphenoid wing meningiomas. These are attached to the dura overlying the sphenoid wings, are usually associated with hyperostosis and they displace the MCA backwards as they grow, while the SFMs do not have dural attachment, do

not produce hyperostosis and grow inbetween the MCA branches [3].

Treatment

Although the absence of dural attachment makes these tumors suitable for a complete resection, their anatomical relationships with the middle cerebral artery branches may impair its achievement.

In the case of recurrent meningioma, surgical resection and adjuvant radiation therapy could be effective for long-term control of the tumor. [4].

Case reports

Hong et al., presented a histologically regressed relapsed meningioma, which spontaneously regressed after subtotal resection. In the case of recurrent meningioma, surgical resection and adjuvant radiation therapy could be effective for long-term control of the tumor. [5].

Donovan and Thavapalan, report two additional cases of sylvian fissure meningioma without dural attachment and one case of perisylvian meningioangiomatosis in the medial temporal lobe. All three patients presented with complex partial seizures, but the diagnosis was delayed in each case because the symptoms were misinterpreted to be behavioral rather than epileptic. The seizures were eventually confirmed with electroencephalogram, and subsequent imaging showed enhancing masses within the sylvian fissure region that were at least partially calcified in all three cases. Each patient underwent craniotomy. In the first case, gross total resection was achieved, and in the second case, a small residual portion of tumor was densely calcified and adherent to the middle cerebral artery branches. Both of these were World Health Organization (WHO) grade I meningiomas. The third patient underwent biopsy and limited resection of meningioangiomatosis. No dural attachments were noted in any of the tumors, but one of the meningiomas was intraparenchymal in location, surrounding the sylvian fissure in both the frontal and temporal lobes, which has been described in only a small number of these cases previously. The patients underwent pre- and postsurgical neuropsychiatric testing and did not experience any significant cognitive deficits. At 10-year follow-up, the patient who had gross total resection of the tumor has had no recurrence and is seizure-free without anticonvulsant medications. The incompletely resected intraparenchymal meningioma in the second patient recurred after 5 years, however, and at repeat surgery was found to have transformed to a WHO grade II tumor. Radiation therapy was delivered and the tumor has been stable for 2 years, but the patient continues to have occasional seizures despite medication. The patient with meningioangiomatosis has had no further growth and has excellent control of seizures but remains on medication. [6].

A heterogeneous contrast-enhanced mass in the right sylvian fissure of a 10-year-old boy with a 3-year history of epilepsy was identified via magnetic resonance imaging. The patient underwent partial surgical resection because the tumor was hard and contained numerous perforators arising from the right middle cerebral artery. The tumor was histologically diagnosed as sclerosing meningioma.

Twelve months after surgery, the patient was asymptomatic and did not require any additional therapies. This case is the first report of a sclerosing meningioma arising in the deep sylvian fissure [7].

Aras et al., reported staged surgery for sylvian fissure meningiomas without dural attachment in two cases [8].

In 2013 a Deep Sylvian Meningioma in a 43-Year-Old Man [9].

Ma et al., reported a case of sylvian fissure atypical meningioma with a 20-year history. The tumor was excised subtotally, thereafter a postoperative radiation therapy was done. The patient had a favorable outcome during the two-year follow-up [10].

Miyahara et al., reported a 34-year-old female with an 8-year history of temporal lobe epilepsy. Magnetic resonance imaging showed a multilobular, well-demarcated and homogeneous tumorous lesion of 5 cm in diameter deep in the left sylvian fissure. Intraoperative findings revealed that the tumor was mainly in the left insular region without dural attachment and strongly adhered to the left middle cerebral artery and its perforators. The histopathological diagnosis was transitional meningioma without malignancy [11].

Cecchi et al., described an atypical sylvian fissure meningioma in a 23-year-old male with a brief history of headache and mild hemiparesis [12].

A 6-year-old boy presented with seizures. Computed tomography and magnetic resonance imaging showed a large enhancing mass in the left temporo-parietal region.

He underwent left temporo-parietal craniotomy and total excision of the lesion. At surgery, there was no dural attachment, and the tumor was mainly in the posterior part of left sylvian fissure. The biopsy was reported as WHO grade I meningioma.

At 4-year follow-up, he was asymptomatic, and there was no tumor recurrence. [13].

Brain CT scan performed on a 73-year-old woman on admission for non-specific symptoms revealed. a heterodense temporoparietal mass which was demonstrated on carotid angiography as being fed by the middle cerebral artery. Preoperatively, a glioma was considered as being most probable because of its radiological features. The mass, which at surgery was found to be located in the sylvian fissure, was histologically confirmed to be a meningotheliomatous meningioma with fibroblastic component [14].

In 2005 McIver et al., first reported case of a chordoid meningioma without dural attachment arising in the sylvian fissure.

The patient presented with a generalized seizure. A heterogeneously enhancing right frontotemporal mass was identified on magnetic resonance imaging of the brain.

The patient underwent a failed stereotactic biopsy attempt elsewhere. The tumor was ultimately resected using standard microsurgical techniques. [15)].

A 35-year-old male. The patient visited the hospital because of a 10-year history of simple partial seizures. Magnetic resonance imaging revealed a 3.5-cm, well-circumscribed, homogenously enhanced, circular mass without dural attachments in the left insular region. The tumor was not stained on angiogram. The tumor was located in the extra-axial space of the sylvian fissure without any dural attachment, and was strongly attached to the middle cerebral artery. The tumor was excised, and a histological diagnosis of a transitional meningioma without a malignancy was made [16)].

In 2002 a Pediatric sylvian fissure meningioma [17)].

A one-year-eight-month old child who experienced the onset of a convulsive seizure. He had no neurological deficit and no developmental disorders. Computed tomography (CT) and magnetic resonance imaging (MRI) showed a large left temporal tumor which was well enhanced and without dural attachment. Angiography revealed a slight tumor stain in the left Sylvian fissure supplied by branches of the internal carotid artery. Total removal of the tumor was performed, and they found that the tumor had no dural attachment, but was strongly attached to the M2 segment of the left middle cerebral artery. Pathological examinations revealed it to be a fibrous meningioma without malignancy [18)].

Cooper et al., reported in 1997 a case in a 4-year-old child [19)].

A 62-year-old woman was admitted because of one year history of temporal lobe epilepsy. She had no neurological deficit except for EEG abnormality. CT scans showed a small calcified mass in the left temporal lobe adjacent to the sylvian fissure with no enhancement by contrast medium. The mass was low-intense in both T1- and T2-weighted MR images. The T1-weighted image after the infusion of gadolinium revealed enhancement of the middle cerebral artery adjacent to the mass, similar to dural tail sign. Left external carotid angiography did not show any tumor stain nor the dilatation of the middle meningeal artery. Left internal carotid angiography disclosed enlarged middle cerebral artery without tumor stain. A left frontotemporal craniotomy was performed and the mass was totally removed. The tumor was located deep in sylvian fissure without any connection to the dura or

ventricular system, which was firmly adherent to the middle cerebral artery. The histological examination of the surgical specimen revealed a psammomatous meningioma MR findings in deep sylvian meningioma was described [20].

Mori et al., reported a 12-year-old boy who has been suffering from severe headache for a month. Neurological examination was normal. CT scan and MR images showed a well-enhanced 7 cm mass lesion with small cysts, located in the left sylvian fissure. Peritumoral edema was slight and the midline structures were minimally shifted in spite of its large size. A fronto-temporal craniotomy was made and the tumor was grossly totally removed. The tumor had no dural attachment and existed in the left sylvian fissure, involving the middle cerebral artery and its branches. The histological diagnosis was transitional meningioma without malignancy. The postoperative course was uneventful except for transient mild left oculomotor palsy for several days. He is doing well now one year after the surgery and follow-up MR images showed no recurrence. Intracranial meningioma is rare in children. According to the literature, meningioma in children is slightly more frequent in males. There is a higher incidence of lack of dural attachment and cystic tumors than in adults. Deep sylvian meningioma without dural attachment is also very rare. Including our case, 13 cases of deep sylvian meningioma were reported in the literature. Four of them were under 20 years old. We report this case in detail with other cases reported previously. [21].

Chiocca et al., reported a deep sylvian fissure meningioma without dural attachments in the right hemisphere of an adult patient. The patient initially presented with simple partial seizures. Magnetic resonance imaging revealed a contrast-enhancing circular mass in the superior aspect of the insular region, deep to the inferior parietal lobule. Surgical exploration confirmed the absence of dural attachments. Microscopically, the tumor was found to be a sparsely cellular meningioma with an extensive collagenous matrix [22].

Graziani et al., in 1992 reported a case [23].

Cho et al., published a 2-year-old boy with a deep sylvian meningioma [24].

Silbergeld et al., a Sylvian fissure meningioma in a 4-year-old female [25].

In 1986 a 34-year-old Japanese woman, who had experienced several episodes of fainting attacks since 19 years old, was admitted to our hospital on March 22, 1983. Her plain skull roentgenogram showed abnormal calcification in her left fronto-temporal region. CT scan demonstrated clear-marginal high density mass in the left sylvian fissure which was homogeneously enhanced after administration of contrast medium. Left carotid angiogram showed intrasylvian mass with small tumor stain in late arterial phase, but external carotid artery had no concern with this tumor. On March 30, left fronto-temporal craniotomy was performed. The tumor was located in the extra-axial space of the

sylvian fissure without any attachment to the dura mater or to the choroid plexus of the ventricles. This hard tumor, 70 grams in its weight, was successfully removed. It was histologically diagnosed fibroblastic meningioma. The patient was discharged without any neurological deficits. Twenty-four cases of meningiomas not attached to the dura mater or to choroid plexus could be reviewed from the literature. This type of meningioma is occasionally called “deep sylvian meningioma”, but in some reports the tumors developed far from sylvian fissure. And even in the cases in which the tumors were reported to be located in the sylvian fissure, macroscopic space where tumors developed was various. The clinical features, diagnosis, and surgical management of this tumor were also discussed in the report [26)].

Okamoto et al., published a 35-year-old woman who was precisely diagnosed preoperatively with the aid of computed tomography and stereoscopic cerebral angiography. On reviewing the literature, it appears to be the first case that has been accurately diagnosed preoperatively and successfully treated by a total excision without serious complication [27)].

Tsuchida et al., in 1981 published the only one of deep sylvian meningioma in the whole series of 181 intracranial meningiomas and probably the twentieth case reported so far in the literature. [28)].

Saito et al., reported a case of 31-year-old female who had episodes of fainting attack. She had no significant neurological deficit but had EEG abnormality. Carotid angiography showed a tumor stain, ca. 1.7 cm in diameter, near the right insula. CT scan also revealed a high density area at the same site. At the time of operation, a small tumor located deeply in the right sylvian fissure was found out and successfully removed. Histologically, this tumor was diagnosed as a meningioma having some typical psammomatous features [29)].

Mori et al., reported a case of “deep sylvian meningioma” [30)].

Barcia-Goyanes and Calvo-Garra described a case in 1953 [31)],

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