

## Case Report

# Meningioma in a 20-Month-Old Boy

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A 20-month-old boy presented with an intraparenchymal mass in the right frontoparietal area manifesting as complex partial seizure, secondary generalization and left hemiparesis. Magnetic resonance images (MRI) of the brain showed inhomogeneously enhancing mass in the right frontoparietal area which has irregular margin and perilesional edema. Based on the radiological findings, a preoperative diagnosis was an intraaxial tumor, such as pilocytic astrocytoma or dysembryoplastic neuroepithelial tumor. The patient underwent a surgery including frontal craniotomy. The tumor had a partially extreme adherence to the surrounding brain tissue but it showed no dural attachment. Gross-total resection of the tumor was achieved. Postoperative follow-up computed tomography scans showed no residual tumor. The pathological findings confirmed the tumor as a WHO grade I meningioma, transitional type. Nine months after the surgery, follow-up brain MRI showed no recurrence of the tumor, porencephaly in site where the tumor was resected; the patient's symptoms had fully recovered. We report the case of a meningioma in a 20-month-old boy.

**Key Words :** Meningioma · Children.

## INTRODUCTION

The occurrence of intracranial meningioma is rare in children; the most prevalent age is the fifth decade<sup>4</sup>. It accounts for 0.4-4.6% of all primary brain tumors in children and 0.9-3.1% of all intracranial meningiomas<sup>3</sup>. Bauchet et al.<sup>1</sup> studied a series of 1017 primary brain tumors in children and, reported 24 cases (2.4%) of the brain tumor in children below 4 years of age; however, he did not report any case of transitional meningioma. In our department, 416 intracranial meningiomas and 94 childhood primary brain tumors have been treated from 1990 to 2010, but only one tumor has been noted in a child below 2 years of age.

Meningiomas that occur in children have several different characteristics than those occurring in adults; it shows a higher frequency of secondary degeneration (cystic or sarcomatous), male predominance (M : F=1.16 : 1), absence of dural attachment (dural tail sign), and higher incidence in the intraventricular location<sup>6</sup>. Here, we report a rare case of a meningioma in a 20-month-old boy.

## CASE REPORT

In May 2010, a 20-month-old boy presented with seizure and

left hemiparesis; he was admitted to the pediatric department at our hospital. He appeared irritable and had an abnormal pattern of sleep; no other neurological deficits were noted. Laboratory findings were negative for hemato-oncological abnormality. Electroencephalography findings showed complex partial seizure, dialeptic type with left hand palsy.

The brain magnetic resonance image (MRI) showed a 4 cm-sized, inhomogeneously enhancing mass with an irregular margin and peritumoral edema in the right frontal lobe (Fig. 1). Based on these radiological findings, the initial diagnosis was an intra-axial tumor, such as pilocytic astrocytoma or dysembryoplastic neuroepithelial tumor. He was transferred to the neurosurgery unit for brain tumor surgery. Because of the peritumoral edema, the steroid (dexamethasone) was administered before the surgery.

The patient underwent a major surgery with frontal craniotomy. The dura mater was tense. After the dura mater was opened, the tumor was seen to be partially adhered to the surrounding brain tissue but it had no dural attachment. Since the tumor originated from the parenchyme, it was designated as an intra-axial tumor. The intraparenchymal tumor located in right frontoparietal area was removed. After the tumor was removed, intraparenchymal tumor bed was seen (Fig. 2).

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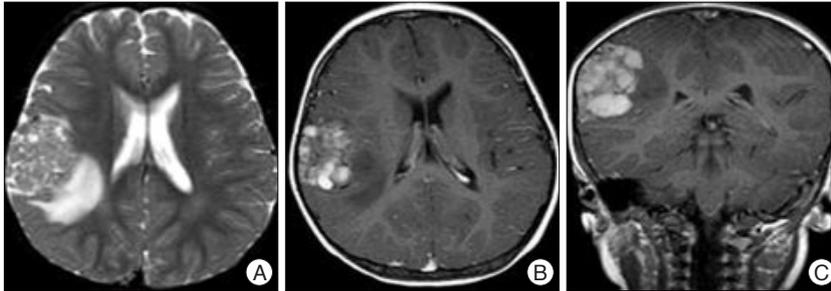
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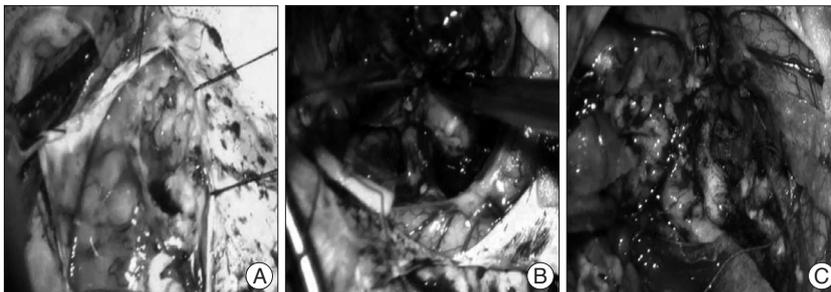
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The tumor showed mixed patterns of lobular meningothelial cells, and fibrous spindle cells forming parallel bundles and occasional psammoma bodies.

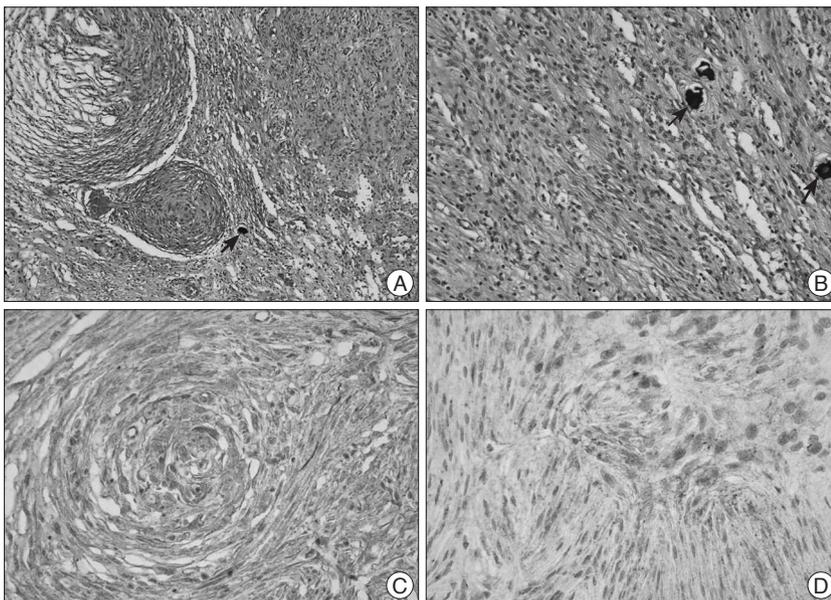
Immunohistochemical findings showed that the tumor cells were positive for vimentin and focal positive for epithelial membrane antigen.



**Fig. 1.** Preoperative magnetic resonance images, showing a tumor as a 4-cm-sized mass with an irregular margin and peritumoral edema in right frontoparietal area. The tumor shows a high signal intensity on axial T1-weighted image (A), an iso signal intensity on axial T1-weighted image (B), and it showed inhomogenous enhancement on an coronal T1-enhanced spin echo image (C).



**Fig. 2.** After the dura mater was opened, the tumor was seen to be partially extreme adhered to the surrounding brain tissue but it had no dural attachment. Since the tumor originated from the parenchyme, it was designated as an intra-axial tumor (A). The intraparenchymal tumor located in right frontoparietal area was removed (B). After the tumor was removed, intraparenchymal tumor bed was seen (C).



**Fig. 3.** Histopathological findings of the tumor showing mixed patterns of lobular meningothelial cells and fibrous spindle cells forming parallel bundles and occasional psammoma bodies (arrow) (A and B). Immunohistochemical finding show that the tumor cells are positive for vimentin (C) and focal positive for epithelial membrane antigen (D). On the basis of these findings, it was concluded that the tumor was WHO grade I meningioma of the transitional type.

On the basis of these finding, it was concluded that the tumor was a WHO grade I meningioma, transitional type (Fig. 3).

Postoperative follow-up computed tomography scans showed no residual tumor. The patient showed remnant neurological deficit, the left hemiparesis. But, no seizure attack was noted. Anti-convulsant therapy was maintained. During the follow-up 9 months after the surgery, he appeared well and did not experience seizure and recovered the full motor power. The brain MRI showed no recurrence of the tumor, porencephaly in a site where the tumor has been resected (Fig. 4).

## DISCUSSION

Meningiomas usually occur in the fifth decade of life<sup>4</sup>. Infantile meningiomas are extremely rare; less than 30 cases are reported in infants below 1 year of age<sup>8,10</sup>.

We report a rare case of a meningioma in a 20-month-old boy.

As compared to meningiomas occurring in adults, those occurring in children have several characteristics; they have a higher frequency of secondary degeneration (cystic or sarcomatous), male predominance (M : F=1.16 : 1), absence of dural attachment (dural tail sign) and higher incidence in the intraventricular location<sup>6</sup>.

Most patients experience headache, vomiting due to increased intracranial pressure and seizure; other common symptoms include nausea, irritability, papilledema, gross motor developmental delay, monoparesis, impaired vision, and diplopia<sup>5,8</sup>. Our patient presented with seizure and left hemiparesis.

The reported radiological features of childhood meningiomas vary in the literature.

High rate of cyst formation of 15-63.6% which differs from the meningiomas in adults is most commonly men-

tioned<sup>4,6,10</sup>). One common neuroradiological finding was the high rate of inhomogeneous enhancement of the tumor (36.2%), which might easily lead to misdiagnosis for glioma or other intra-axial tumors, especially with coexistent cystic components<sup>4</sup>.

Therefore, diagnosis of meningioma in childhood was challenged because of its rarity and atypical radiologic appearance, unusual location<sup>5</sup>.

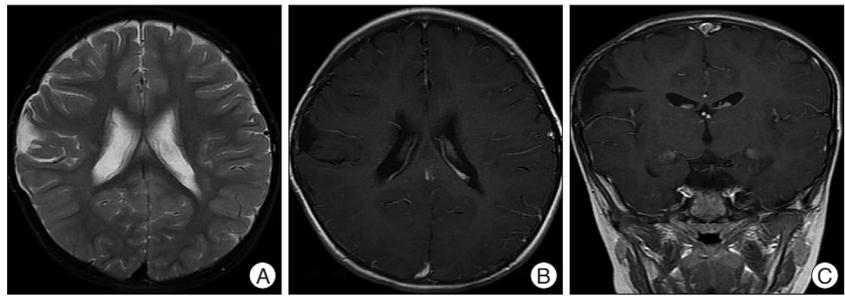
For meningiomas, the primary treatment is surgery<sup>9</sup>. Complete tumor resection is the most important factor in prevention of tumor recurrence<sup>5</sup>. Radiation therapy is indicated for patients whose tumors cannot be completely resected, such as tumors that have deep location, large size, and adherence to the vital structure or the tumors that will result in extensive invasion to adjacent structures or severe blood loss during resection<sup>4,8</sup>. In the present case, the tumor was grossly total resected, and therefore, additional postoperative therapy such as radiotherapy or chemotherapy was not necessary.

Recurrence of a meningioma depends on the extent of removal, its location of tumor, and histological subtype<sup>4</sup>. The extent of resection seems to be the most important factor influencing the prognosis of a meningioma.

According to different authors, the prognosis of a meningioma in young children is controversial. However, in a recent study conducted by Luigi et al., it was reported that owing to progress in microneurosurgical and anesthesiological techniques, 89% patients showed no recurrence of the tumor on follow-up image study<sup>3</sup>. Our patient showed no remnant neurological deficit after surgery. Follow-up MRI after 9 months of the surgery showed no recurrence of the tumor.

## CONCLUSION

We experienced a rare intracranial meningioma in a 20-month-old boy. The gross total surgical removal was achieved. After the surgery, patient recovered without seizure. Although there are no typical imaging features that are suggestive of meningioma in children, the diagnosis of a meningioma should be considered if a large, solid, cystic enhancing tumor with a relatively



**Fig. 4.** Follow-up brain magnetic resonance image (MRI) obtained 9 months after the surgery does not show any recurrence of the tumor, porencephaly in a site where the previous tumor was resected. The MRI showed irregular brain defect in right posterior frontal area on an axial T2-weighted image (A), on an axial T1-weighted image (B), and it showed no abnormal enhancement on an coronal T1-enhanced spin echo image (C).

sharp demarcation is detected in children.

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