Frontal convexity meningioma

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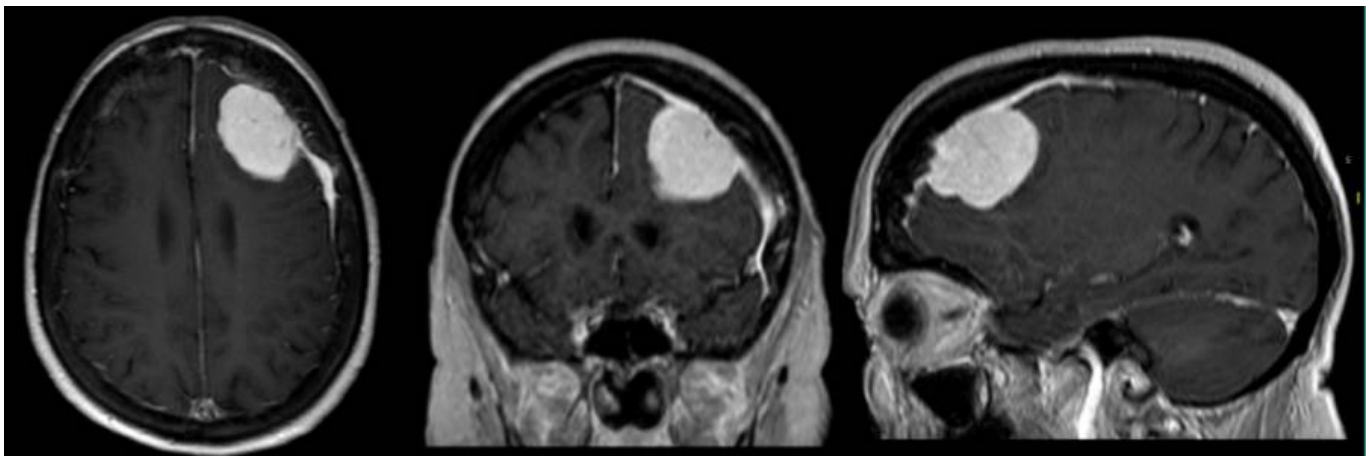
A 68-year-old patient who had been under study for resting tremor for less than a year.



Large left frontal extraaxial lesion with a maximum diameter of 4.1 x 2.9 x 3.5 cm (AP x T x CC) with significant contrast enhancement and an associated dural tail sign. It causes a mass effect on the left frontal lobe with mild edema. Posterior to this lesion there is a relatively extensive pseudonodular thickening of the left pachymeninge of at least 3 cm in craniocaudal diameter, 2.2 anteroposterior and with a maximum thickness of 8 cm.

Case reports

A 40-year-old man with intracerebral pneumocephalus who previously underwent craniotomy for large frontal convexity meningioma and lumboperitoneal shunting. He presented with gait disturbance 14 months after tumor resection. Computed tomography and magnetic resonance imaging showed intracerebral pneumocephalus in the right temporal lobe, which continued into the mastoid air cells through a bone defect of the right petrous bone. They performed urgent right temporal craniotomy to reduce the mass effect and to repair the fistula. Intraoperatively, bone defects were identified at the roof petrous bone, into which the encephalocele had penetrated. The herniated cerebral parenchyma was removed, and the pneumocephalus opened. The dura was closed with sutures and covered with fascia. To elucidate the underlying mechanism for the development of intracranial pneumocephalus,

the previous images obtained before or immediately after resection of meningioma were reviewed. They founded that multiple preexisting bone defects and encephaloceles, one of which was considered to be the cause of the intracerebral pneumocephalus. This case demonstrates that intracerebral pneumocephalus can be caused by preexisting bone defect and encephalocele, and this finding may be useful for prediction of pneumocephalus after shunt procedures [1].

A 55-year-old woman had a frontal convexity meningioma identified by brain magnetic resonance imaging during a checkup. Cerebral angiography revealed the middle meningeal artery as a feeding artery as well as the presence of an aneurysm associated with the meningolacrimal artery. Embolization of the feeding artery was performed before the removal of the meningioma. The meningioma was resected, and the aneurysm was removed with a bone flap. The patient was discharged without any complications.

Embolizing the feeding artery of the aneurysm was helpful in safely resecting the meningioma. [2].

A 66-year-old patient with a frontal convexity meningioma, presenting with a cystic component and bone invasion, who was treated using 5-ALA fluorescence-guided surgery. Fluorescence emission from the tumour tissue allowed the areas of bone invasion and the cystic wall to be identified, achieving complete resection [3].

Acase of a 65-year-old lady with a nonfunctioning pituitary neuroendocrine tumor and an associated frontal convexity meningioma with frontal sinus invasion. The imaging was nonspecific for the meningioma, and its association with concomitant PA has not been reported before. [4].

A 63-year-old man underwent total resection of a right frontal convexity meningioma, World Health Organization Grade I in 2001. He presented in 2016 with a small frontal cutaneous mass over the craniotomy site. Computed tomography showed extracranial and intracranial components of the meningioma. The patient declined surgical intervention and lost to follow. One and half years later, he underwent resection of the growing ulcerating cutaneous component in an outside hospital. The pathological diagnosis was Grade 3 meningioma. Six months later, he presented to us with a massive cutaneous meningioma and large intracranial component. Surgical resection and multidisciplinary management were planned. The patient was very hesitant to have surgery but settled for receiving radiation. Seven months after radiation, he presented with a decreased level of consciousness and skin necrosis with maggot infestation. His code status was changed to “do not attempt resuscitation,” and he died 3 days later in December 2019.

Large intracranial meningiomas with massive transosseous extension to the scalp pose a significant challenge to the treating team. Proper planning and a multidisciplinary approach are essential. However, prognosis remains generally poor [5].

Shen et al. presented a unique case involving an acute cerebral venous outflow obstruction that

occurred during meningioma resection that ultimately had catastrophic consequences.

Materials and methods: The patient's preoperative imaging only revealed an unremarkable frontal convexity meningioma with an average diameter exceeding 8 cm. She was admitted for a scheduled right frontoparietal craniotomy for lesion resection.

Results: The patient's unique congenital dural venous sinus structure along with a non-surgical epidural hematoma both contributed to a catastrophic outcome, causing a progressive hemispheric encephalocele, significant blood loss, and wound closure difficulties.

Conclusion: Neurosurgeons should place an additional focus on cerebral venous outflow patency during tumor resection, even if the tumor does not involve the transverse or sigmoid sinuses. It is well known that the tacking sutures play an essential role in preventing an epidural hematoma, but the procedure to mitigate hematomas occurring outside the surgical field of view is not fully recognized by neurosurgeons. If dural tacking sutures are placed after complete tumor resection, the prophylactic effect for preventing EDH in the non-surgical areas may not be guaranteed. Therefore, we strongly advocate for the tacking sutures to be accurately placed before dural incisions are made [6)].

An uneventful frontal convexity meningioma resection was performed for a 60-year-old woman, and at 67 years of age, a bAVM was detected by MRI and confirmed by digital subtraction angiography at the site of the previous meningioma resection. This case adds to the growing literature that the etiology of bAVMs is most likely multifactorial. [7)].

Acase of frontal convexity meningioma detected incidentally at MRI during the preoperative assessment of tongue cancer. To the best of the authors' knowledge, this case report is the first regarding the successful treatment of tongue cancer in a patient with incidental meningioma. The incidence, perioperative management, and various imaging tests to detect meningiomas are discussed, with a review of the literature. [8)].

Chronic headache due to left frontal convexity meningioma, with proximal internal carotid artery aneurysm which was found incidentally during preoperative magnetic resonance angiography. [9)].

A 72-year-old man underwent surgery for a frontal convexity meningioma. Four years after the surgery, a new lesion was detected in the attached region where the meningioma had been removed. The second tumor exhibited a high degree of cellularity, atypical mitosis, pseudo-palisading and microvascular proliferation, and was immunohistologically positive for GFAP and was diagnosed as a glioblastoma. Wild-type isocitrate dehydrogenase 1 was found in the second specimen. A genetic analysis using comparative genomic hybridization showed a DNA copy number loss on 1p35, 9pter-21, 10, 11q23, 13q, 14q, 20q, 22q and a gain on 7 in the second specimen. Although the mechanism responsible for the consecutive occurrence of meningioma and glioblastoma has not been elucidated, five hypotheses are feasible: (i) the lesions occurred incidentally; (ii) a low-grade astrocytoma present at the time of the first operation transformed into a high-grade glioma during the

next 4 years; (iii) radiation received during the endovascular treatment induced glioblastoma; (iv) a brain scar created at the time of the first operation for meningioma led to the occurrence of a glioblastoma; and (v) the previous meningioma affected the surrounding glial cells, causing neoplastic transformation. [10].

A 45-year-old man had a large left frontal convexity meningioma. He was operated upon and, during craniotomy in the supine position, suffered a massive episode of air embolism with severe respiratory and hemodynamic changes. The AE episode occurred while we were cutting the bone for the craniotomy before turning the bone flap. Because the patient was bleeding profusely, the bone flap was quickly removed to achieve hemostasis. Aspiration of irrigant into the cut bone surfaces through several venous diploic channels in the bone edges was observed. The procedure was terminated when hemostasis was achieved. The meningioma was successfully removed in a second operation.

Conclusion: We think that our case should serve to warn the neurosurgical community about the risk of AE in supratentorial procedures in the supine or semisitting positions when preoperative radiological imaging studies show the presence of important venous channels in relation to the site of the tumor. [11].

A patient with a convexity meningioma, which recurred as a malignant transformation 26 years after a total tumor removal. A 75-year-old man was transferred to a local hospital because of general convulsions and left hemiparesis. The patient had had an operation for the total removal of a right frontal convexity meningioma at the age of 46 and had been free of its effects until the age of 72. Brain magnetic resonance imaging (MRI) showed a recurrent tumor located in the anterior area of the previous craniotomy. Over the following two and a half years, MRI revealed rapid enlargement and infiltration of the tumor into the brain parenchyma. The primary tumor was nodular, macroscopically well demarcated from the surrounding brain tissue and, histologically, was a transitional type of meningioma without any atypical features. In contrast, the recurrent tumor, whose border was ill-defined, had invaded the neighboring brain. A histological specimen of the recurrent tumor showed highly malignant features such as necrosis, intracerebral infiltration, dense cellularity, and high proliferating activity as demonstrated by a cell kinetic study using the MIB 1 staining index. We should be mindful that recurrence from common benign type meningiomas may occur as malignant transformations after more than two decades. [12].

A case of 39-year-old man with incidentally found meningioma whose postoperative WAIS-R scores were improved significantly. He got a minor head injury run in a car collision and showed no neurological findings on admission. Computed tomography revealed no traumatic abnormalities but left frontal convexity meningioma. Total removal of the tumor was performed 3 weeks after the admission. Preoperative verbal IQ, performance IQ, lower full IQ were 105, 95, 100 respectively, and improved to 113, 112, 114 postoperatively. An asymptomatic patient with incidentally found meningioma could have higher brain function disturbances, which could be improved after its resection, therefore we should operate on such a patient more positively [13].

A 43-year-old female presented with progression of a multi-lobulated anterior parafalx meningioma

several years following resection of a large left frontal convexity meningioma.

Intervention and technique: Surgical excision of the lesion was undertaken. Following apparent total resection, intraoperative MR imaging revealed two residual dumbell shaped lobules. Using these updated MR images, the tumour was readily identified and removed.

Conclusion: The moveable 1.5 Tesla intraoperative MR system used in the present case provides rapid, high resolution MR images during neurosurgical procedures. Moving the magnet out of the surgical field during surgery permits the use of all standard neurosurgical instruments. The ease of use and quality of images combined with minimal interference on well-established surgical techniques makes this system a valuable adjunct in the neurosurgical treatment of intracranial disease. [14].

Evidente et aL described improvement, though not abolition, of tremor after removal of a frontal convexity meningioma [15].

Matsui et al. demonstrates the detachment of desmosomes in the microcystic area of a frontal convexity meningioma removed from a 69-year-old woman. Well-developed interdigitations of the tumor cell processes with numerous desmosomes and with narrow extracellular spaces were characteristic features of the solid area of the meningioma. By contrast, the microcystic area of the tumor had markedly distended extracellular spaces. Various stages in the separation of desmosomal attachments were seen in this area. The observed configurations ranged from the widening of opposing junctions to the formation of large cavities where hemidesmosome-like structures were evident. The latter lacked basal lamina, and are considered to represent a transition leading to the loss of desmosome, and thus involved in the enlargement of the extracellular space in microcystic meningiomas. [16].

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