Case Report

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Massive cystic falcine meningioma presented with slight symptoms: a case report

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Introduction and importance: Meningiomas are the most common intracranial tumors while their presence with cysts is relatively low. In general, large ones usually present with severe symptoms and have a high recurrence rate even after total resection which is also difficult.

Case presentation: The authors present a case of an elderly patient with a large Falcine meningioma associated with peritumoral cysts. The patient presented with mild symptoms despite the tumor's significant size. Imaging studies revealed a large mass in the falcine region with peritumoral cysts. The patient underwent surgical resection of the tumor, which was completed without complications.

Clinical discussion: The atypical presentation of this large Falcine meningioma with peritumoral cysts highlights the variability in clinical manifestations of these tumors. Despite the tumor's size and the presence of peritumoral cysts, the patient experienced mild symptoms and recovered after relatively easy surgery challenging conventional expectations.

Conclusion: The successful outcome of this case demonstrates that even large meningiomas can present with mild symptoms. Medical practitioners should not always link the tumor size to the severity of symptoms, recurrence rate, and complexity of surgery.

Keywords: case report, cystic meningioma, falcine meningioma, giant meningioma, meningioma

Background

All brain tumors are malignant-symptom tumors regardless of their pathology, as the mass effect of the tumor alone is sufficient to cause symptoms that may be fatal or cause permanent disabilities. Meningiomas are the best examples of such tumors. As their growth rate is ~2.41 mm per year which is quite slow, they rarely cause clinical symptoms until the tumor becomes large[1,2]. However, when the tumor gets bigger after a bunch of years; a various group of symptoms begins to appear.

The diameter of a meningioma to be called a giant tumor has not yet been determined in the literature. Some authors have found that a meningioma with a diameter of 4.5 cm can be called giant, while others have defined giant ones as larger than 5 cm, 6 cm, or 7 cm in maximum diameter[3–5], but in the majority of publications, tumors >5 cm are usually identified as giant meningiomas.

HIGHLIGHTS

- Large meningiomas are generally a complex condition in medicine and are associated with high rates of recurrence and morbidity.
- Cystic meningiomas are a rare condition with an overall incidence rate of less than 10%.
- Complete surgical excision is the primary treatment in most cases of large tumors.
- The presence of a tumor with an approximate size of 409.5 cubic centimeters is a very rare condition, and having mild symptoms make it even more rare.

Anterior falcine meningiomas are most likely to be large at presentation and present with impaired vision (54%), headache (48%), anosmia (40%), seizure (20%), psychomotor symptoms, and behavioral disturbance with personality disintegration[6], and quite hard to resect totally.

We will report a case of a very giant cystic meningioma with slight symptoms that do not match its size, and it was completely removed without any subsequent sequelae. The work has been reported in line with the Surgical CAse REport (SCARE) 2023 Criteria[7].

Case-presentation

Clinical history

A 70-year-old female, without notable medical history, presented to the neurosurgical clinic exhibiting gradually developing disorganized speech and aggression over the past 3 months. Additionally, she reported experiencing urinary urgency for the past 30 days. The patient denied any history of abnormal body

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movements, urinary incontinence, visual disturbances such as blurring or double vision, auditory disturbances, or any traumatic events. She reported no family history of malignancies or other tumors, no significant previous exposure to radiation, no prior surgical or medical interventions, and no alcohol consumption.

Examination findings

Upon clinical examination there was a slight muscle weakness in the lower limbs and the patient was a bit muddle-headed. Her general condition was fair and her vital signs were stable.

Radiological imaging

A brain MRI showed a bilateral mass in the frontal lobe that was isointense relative to the cerebral cortex on T1-weighted sequences and a bit hyperintense on T2-weighted sequences, there was also a highly intense mass in the left lobe that appeared to be a cyst in the mass later. A contrast-enhanced brain MRI showed a well-defined bilateral mass (8.41 cm × 6.67 cm × 7.30 cm) in the frontal lobe (Fig. 1). The distinct demarcation, radial morphology, and considerable dimensions of this lesion strongly suggest a diagnosis of Cystic Meningioma, with Dural metastasis, and alternative neoplasms being included in the list of differential diagnoses.

Further examination

An ophthalmologic assessment was conducted, indicating absence of optic papilla atrophy or edema. Urinalysis yielded unremarkable results, while blood tests demonstrated parameters within physiological limits.

Surgical procedure

A radical tumor resection procedure was performed. The patient was positioned supine with her head secured in a Mayfield clamp. A wide craniotomy flap was created bilaterally on the frontal bone, beginning ~0.5 cm anterior to the coronal suture. The dura mater was opened while remaining adherent to the falx cerebri bilaterally. A clip was placed on the superior sagittal sinus, which was partially blocked. Tumor debulking was conducted from the center to decrease intracranial pressure, thereby facilitating subsequent resection. Bipolar cautery was utilized for hemostasis of bleeding vessels. Following tumor removal, the dura mater was closed in a watertight fashion using pericranial grafts. The presence of a cyst on the left side facilitated the resection on that side.

Histopathological examination

Histological examination revealed meningothelial cells displaying oval nuclei and fine chromatin, encapsulated within fibrous tissue, confirming the diagnosis of a WHO grade I meningothelial meningioma[8] (Fig. 2).

Follow-up and outcome

The patient did not require transfer to the ICU and was discharged after 3 days with a Glasgow Coma Scale (GCS) score of 15. The postoperative recovery was promptly favorable, marked by the cessation of urinary urgency and restoration of normal personality assessment. Follow-up MRI 2 months later revealed no evidence of tumor recurrence, with previously compressed brain structures beginning to regain their normal morphology. The patient remained interactive, and her speech functioned within normal parameters. The neurological examinations were within normal limits.

After 1 year of follow-up, we did another contrast-enhanced brain MRI showed no residual or recurrence with frontal encephalomalacia changes, and the patient was in good health with normal neurological function assessment (Fig. 3).

Discussion

Meningiomas are the most common primary central nervous system tumors accounting for about 37.6% of them; and ~50% of all benign brain tumors[9]. But it is out of the ordinary how big the tumor is and how mild and limited the symptoms are in our case.

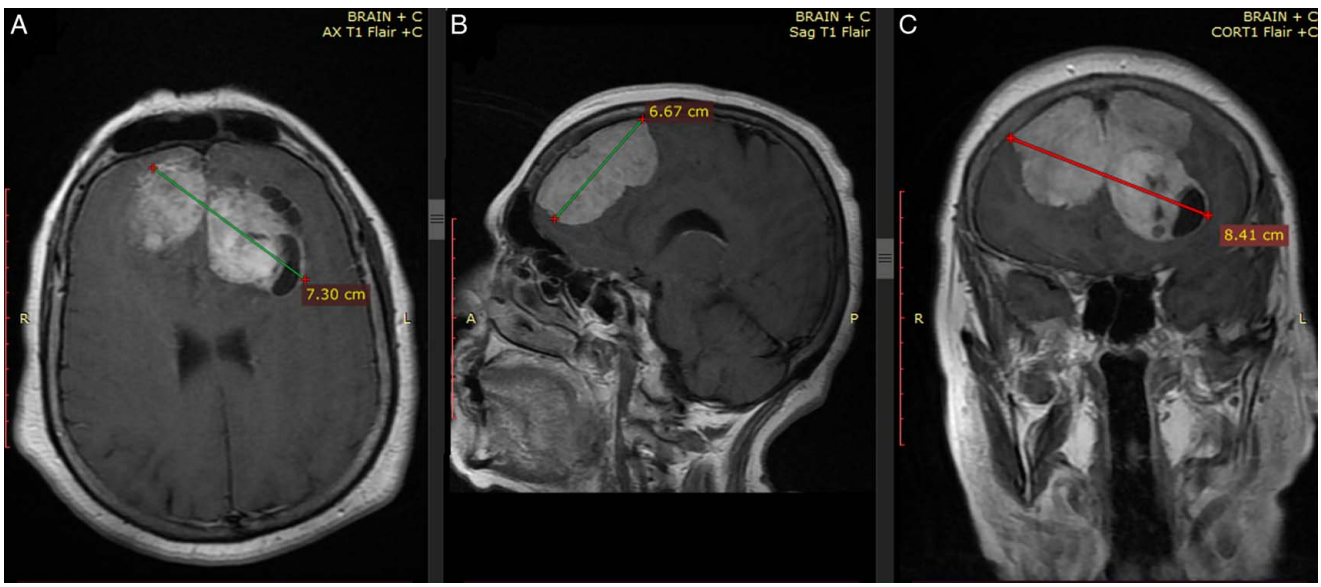

Figure 1. Contrast-enhanced T1-weighted axial (A), sagittal (B), and coronal (C) MRI demonstrating the massive tumor before surgery.

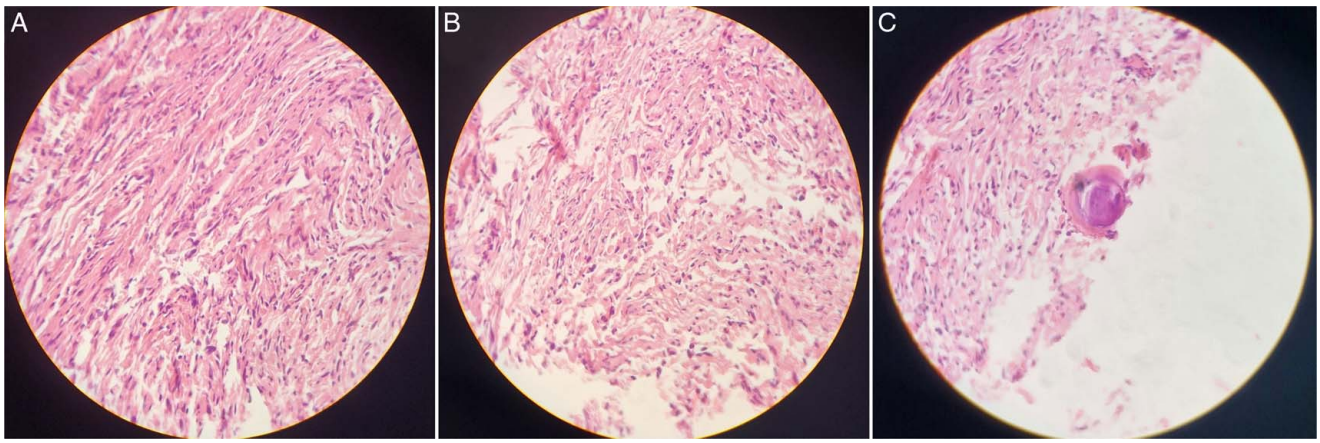

Figure 2. Histopathology features. (A) and (B) there are bundles of elongated fibers with spindle cores that are similar in shape and size, no mitosis was found. (C) In the middle, there is a Psammoma body.

There are a lot of studies about huge meningiomas in the literature, as Yaşar and Kirik[10] reported 61 patients with huge intracranial meningiomas and they classified meningiomas >5 cm in minimum diameter as giant meningiomas, they concluded that giant meningiomas are very rare and challenging cases in neurosurgery. Özsoy *et al*.[4] reported their series of 56 patients with giant meningiomas over a 15-year period and emphasized that the size of the tumor is directly related to mortality and morbidity. Tuna *et al*.[5] reported 93 patients with huge intracranial meningiomas and they considered tumors >6 cm in minimum diameter as huge meningiomas, they came to a conclusion that the huge size of meningioma negatively affects the extent of removal, recurrence rate, postoperative outcome, and mortality. In comparing our case with the existing literature, we observed that the surgical procedure of this giant tumor was less challenging than expected, attributed to minimal brain compression resulting from age-related cerebral atrophy. Additionally, the presence of a cyst in the left hemisphere provided clear dissection boundaries, thereby facilitating the resection process.

The extent of resection in meningiomas is always measured by Simpson grading in neurosurgery, and achieving total tumor resection (Simpson grade 1 or 2) reduces recurrence rate and mortality[11].

The presentation of large meningiomas often depends on their location, in addition to the symptoms caused by the mass effect (headache, nausea, seizures, and Papilledema). Gradual personality changes and partial seizures can be seen in anterior falx meningiomas, but these tumors often present with a long history of headache and optic atrophy[6]. Surprisingly, in this case, there was no headache and the optic disc examination was normal even though some brain structures were compressed. The postsurgery MRI revealed mild brain atrophy, which likely contributed to the alleviation of pressure exerted by the tumor. When we review the medical literature, we notice some cases in which the brain atrophy has hidden some of the high intracranial pressure symptoms, but it is very rare for a mild atrophy to hide nearly all symptoms and signs of such a giant tumor[12].

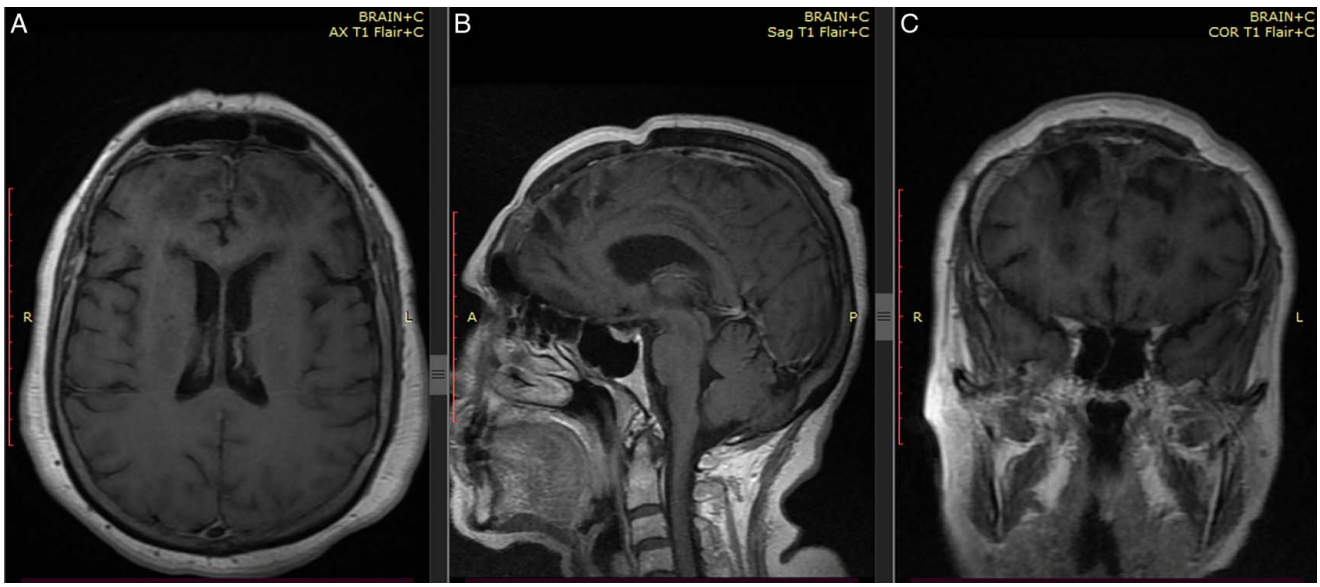

Figure 3. A brain MRI with contrast after one year showed no evidence of recurrence. Axial (A), sagittal (B), and coronal (C).

The classification of the tumor as a cystic meningioma and the presence of cerebral atrophy are deemed minor contributors to symptom concealment. Therefore, the gradual expansion of the tumor remains the primary underlying cause for symptom mitigation.

It has been reported before about a case of giant frontal meningioma with a history of urinary incontinence and behavioral changes but the patient was unconscious on presentation[13]. Another cystic meningioma was reported with urinary incontinence in 2013 with memory decline for 2 months[14]. In both cases there was no incontinence after surgery. In our case, the patient was mainly complaining of personality changes, and she thought that the urgency was caused by a urinary problem, even though the urinary tests were normal. The improvement of all symptoms and the disappearance of urinary urgency after surgery indicated that the main cause was the tumor because it was compressing the medial prefrontal cortex (mPFC), which is related to the micturition center[15].

Conclusion

This case of a large falcine meningioma with minimal symptoms and the presence of a cyst is quite unusual and presents a unique clinical scenario. The cyst unexpectedly aided in the surgical resection process without causing any complications. It is also very important to note that the severity of symptoms and the complexity of surgery should not always be directly correlated with the size of the tumor. This case highlights the need for additional research to better understand the factors influencing the presentation and management of such rare cases.

Ethical approval

Ethics approval is not required for case reports at my institution. My institution name is Al-Basel Hospital.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

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Author contribution

M.H.: contributed to writing, editing, data collection, data interpretation and analysis, drafting, and critical revision; I.S.: contributed to data collection, design, and editing of the manuscript; A.S.: contributes to providing the results of the pathology; S.T.: performed the urinary examinations; I.S.: is the supervisor; he performed the surgery, and he also contributed to critical revision.

Conflicts of interest disclosure

The authors declare that they have no conflicts of interest.

Research registration unique identifying number (UIN)

Not applicable.

Guarantor

Dr Issam Salman is the guarantor of this case report.

Data availability statement

Not applicable. All data (of the patient) generated during this study are included in this published article and its supplementary information files.

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