

## A flower in the brain: Planum sphenoidale meningioma

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**Key words:** Meningioma, olfactory groove, planum sphenoidale, unexplained vision loss

A 28-year-old female presented to our outpatient department with the chief complaint of gradual painless diminution of vision in the left eye for 1 month. There was no history of fever, headache, vomiting, or generalized weakness preceding vision loss. On ocular evaluation, her visual acuity in the right eye was 20/20, N6 whereas in the left eye was counting fingers (CF) at a 1-m distance. Color vision and contrast were normal in the right eye and could not be evaluated in the left eye. Pupils reacted briskly in the right eye but there was grade 1 relative afferent pupillary defect in the left eye. There was no limitation of extraocular movements in both eyes. Posterior segment evaluation showed mild temporal pallor of both optic discs [Fig. 1]. Other cranial nerves examination revealed no abnormality. Visual fields showed advanced field loss in the right eye, significant in the inferotemporal quadrant [Fig. 2].

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The right eye was essentially normal. She was requested immediate magnetic resonance imaging (MRI) of the brain which suggested planum sphenoidale meningioma. On reviewing history, she did not complain of any associated symptoms like loss of smell, endocrine abnormalities, or psychological disturbance. Axial T1-weighted [Fig. 3a] and T2-weighted [Fig. 3b] images showed a well-defined extra-axial mass originating on the planum sphenoidale, compressing the basi-frontal and capsule-ganglionic regions. Fig. 3c and d show the coronal and sagittal sections showing the same lesion. It showed characteristic radially oriented "spoke-wheel-like" enhancement on post-contrast study [Fig. 4a]. Such heterogeneous enhancement is atypical of meningioma and resembles the characteristic appearance of a floral pattern [Fig. 4b]. Such a differential enhancement in this MRI image has an uncanny resemblance with the evening primrose flower [Fig. 4c]. The patient was referred to a neurosurgeon for further management and she underwent tumor resection. Neurosurgeon's evaluation also did not reveal any generalized weakness, dementia, or cognitive dysfunction. Histopathological correlation was suggestive of transitional meningioma with foci of calcification. In the subsequent follow-up, 2 weeks later, visual acuity in the right eye was 20/25 but there was an improvement in visual acuity of the left eye to 20/150. Pupil reactions showed an ill sustained reaction in both eyes postoperatively. Fundus showed temporal pallor in the right eye and diffuse disc pallor of the left eye.

## Discussion

Planum sphenoidale meningiomas are extra-axial slow-growing tumors arising from the roof of the sphenoid sinus and the area between the optic nerves and the anterior clinoid processes. Enlargement of this meningiomas usually pushes the optic nerves dorsally and caudally causing vision loss as a primary manifestation.<sup>[1]</sup> Planum sphenoidale meningiomas to represent 5% to 10% of intracranial meningiomas with female predominance.<sup>[2]</sup> Majority of them are reported in adults and the preponderance increases

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after 65 years of age.<sup>[3]</sup> In a study by Falbusch *et al.*, among 47 cases of suprasellar meningioma, the mean age for women was 54.3 years (range 36–74 years) and for men, it was 54.9 years (range 28–74 years).<sup>[4]</sup> However, our case was younger than these cases reported in the literature.

Owing to the slow-growing nature and subtle symptoms developing over a prolonged time they have a larger tendency to remain undiagnosed till late.<sup>[3]</sup> In our patient, though the meningioma was significantly large in size, the patient

complained of visual symptoms only in the left eye, and for the past 4 weeks only. However, the patient did mention that there was a progressive diminution of right eye vision also till the neurosurgical intervention was performed. This is explained by the large size of the lesion which compressed both the optic nerves. More often these are located anteriorly and in the proximity of the olfactory groove. Symptoms of dementia personality changes and anosmia are common with olfactory groove and planum sphenoidal meningioma, which reverse after removal of the tumor.<sup>[4]</sup> None of such symptoms were noted in our patient.

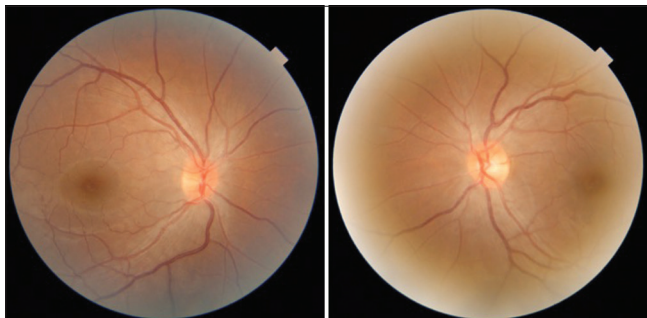


Figure 1: Mild temporal pallor of both optic discs

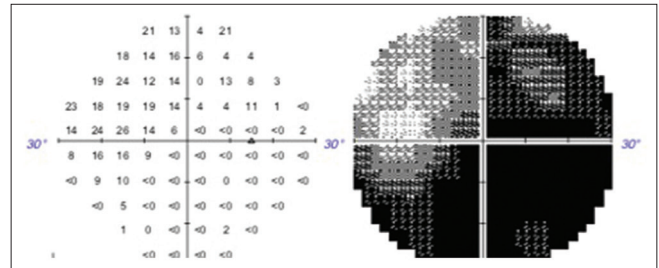


Figure 2: Preoperative visual fields of the right eye

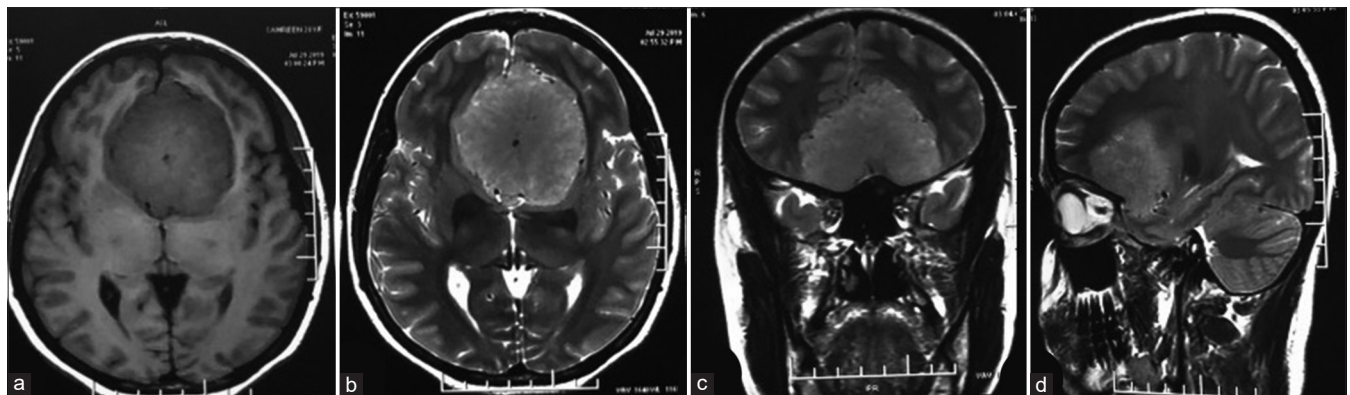


Figure 3: The magnetic resonance imaging appearance of the lesion. (a) Axial T1 weighted images showing a well-defined extra-axial mass arising from planum sphenoidale. (b) Axial T2 weighted images showing a well-defined extra-axial mass arising from planum sphenoidale compressing the bifrontal and capsule-ganglionic regions. (c and d) T2 coronal and sagittal sections of the lesion

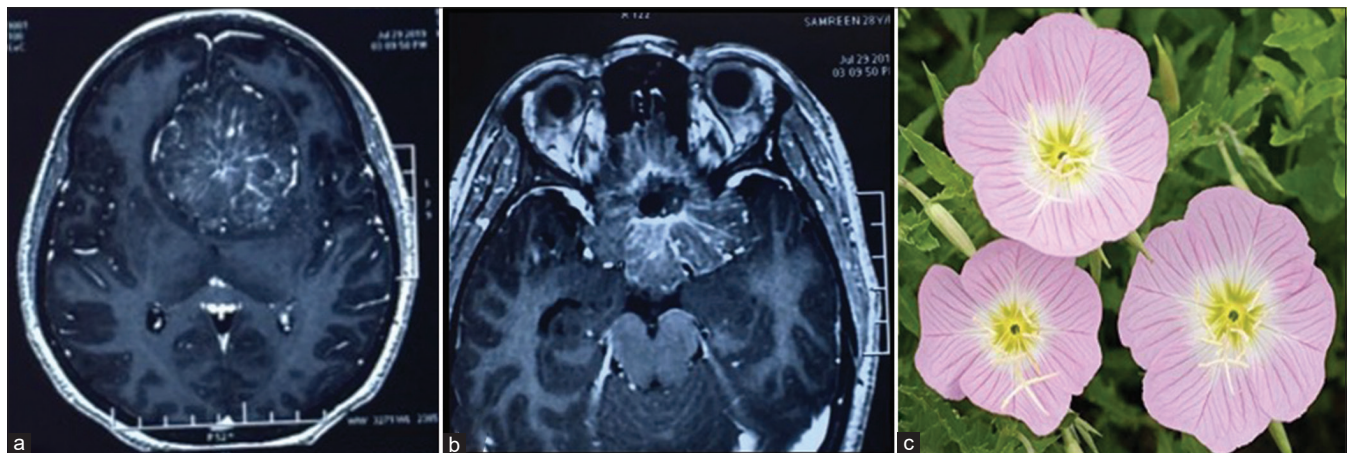


Figure 4: (a) Shows post-contrast image with enhancement and characteristic radially oriented “spoke-wheel-like” appearance. (b) Shows a post-contrast image with heterogeneous enhancement and resemblance with a floral pattern. (c) Shows evening primrose flower which closely resembles the radiological appearance as a flower in the brain

MRI remains the confirmatory diagnostic procedure where the lesion appears hypo- to isointense on T1-weighted imaging and possesses variable signal intensity on T2-weighted images. Gadolinium MR imaging demonstrates intense homogeneous enhancement with well-circumscribed margins and dural tail. Although meningioma is known to enhance homogeneously on contrast uptake, atypical ones may have heterogeneous enhancement. The enhancement may be heterogeneous secondary to the presence of intrinsic calcification, cysts, and necrosis.<sup>[2,3]</sup> Such a differential enhancement in this MRI image has an uncanny resemblance to a “flower.” This appearance with central island and multiple projecting spokes closely replicate an “Evening Primrose flower.”

In our case, there was a heterogeneous enhancement on post-contrast images with suspicion of calcification or necrosis. This was further confirmed on a histopathological report which was suggestive of meningothelial cells in sheets and whorls, with the presence of foci of calcification but absent necrosis. Early accurate diagnosis of these tumors is possible through the use of neuroimaging which is recommended for all patients with gradual and progressive impairment of vision.<sup>[5]</sup>

#### Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient (s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients

understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Nil.

#### Conflicts of interest

There are no conflicts of interest

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