Abstract: Olfactory groove meningiomas account for about 3 percent of all intracranial tumors. They arise from arachnoid cells near the olfactory groove and crista galli. They cause papilledema after reaching a considerable size. This patient presented with vision loss in one eye but retained vision in the other eye because of prompt referral and intervention.

Keyword: olfactory groove, papilledema, optic atrophy, visual deficits

INTRODUCTION
Olfactory groove meningiomas represent 10% of all intracranial meningiomas. They are commonly detected in the middle and late decades of life and 2-3 times more common in women than men. This female preponderance may be related to estrogen and progesterone receptors in these tumors. It is very rare in patients less than 20 years of age. There is no gender predilection in children.

CASE REPORT
A 50-year-old female patient presented with defective vision in left eye of one month duration. She gave a history of headache of one year duration, which was frontal and dull aching, relieved with medications. She denied any symptom of raised intracranial tension, seizures or neurological deficit. There was no history of trauma or surgery. There was no history of chronic drug intake. She was not a diabetic or hypertensive. She attained menopause 1 year ago. On examination, she had a visual acuity of 6/6 in right eye and 5/60 NIP in left eye. Colour vision by Ishihara pseudoisochromatic plates was normal in right eye and defective in left eye. Anterior segments were normal in both eyes. Pupillary reaction was normal in right eye. In left eye, grade I RAPD was noted. Extraocular movements were full in both eyes. Fundus examination in both eyes revealed chronic papilledema (disc edema more in left eye).

CHRONIC PAPILLEDEMA - RIGHT EYE

CHRONIC PAPILLEDEMA - LEFT EYE

Automated perimetry showed few absolute scotomas and areas of depressed sensitivity throughout the retina in right eye. Perimetry was not performed in left eye because of poor vision. CNS examination was normal except for decreased smell perception. An urgent MRI Brain was ordered which showed a homogenous mass lesion measuring approximately 6.4 x 6.9 cm seen in the frontal lobe on midline. Optic chiasm and genu of corpus callosum are compressed with surrounding edema. No calcification is seen. These features and location were suggestive of Olfactory groove meningioma. The patient was referred to neurosurgeon for further management. She underwent bifrontal craniotomy and total excision of the tumor.

AXIAL SECTION OF MRI SHOWING A HOMOGENOUS MASS WITH A RIM OF CSF AND PERITUMORAL EDEMA

A CASE OF BILATERAL PAPILLEDEMA DUE TO GIANT OLFATORY GROOVE MENINGIOMA
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Histopathological examination of the mass showed a neoplasm composed of spindle to oval cells arranged in sheets, lobules and whorls separated by dense fibrous stroma with numerous congested blood vessels and areas of hyalinisation suggestive of Olfactory groove meningioma-transitional type.

LOW POWER VIEW SHOWING SYNCYTIAL ARRANGEMENT OF MENINGOTHELIAL CELLS

HIGH POWER VIEW SHOWING WHORL PATTERN

Follow up: Patient was followed up one month after surgery. Fundus examination of both eyes showed a complete resolution of disc edema but pallor has set in left eye. So, visual acuity remained 6/6 in right eye but deteriorated to 2/60 NIP in left eye. Automated perimetry showed improvement in field defect in right eye but could not be done in left eye because of poor vision.

PAPILLEDEMA RESOLVED IN RIGHT EYE AFTER

POSTOPERATIVE AUTOMATED PERIMETRY -RIGHT EYE

DISCUSSION

Olfactory groove meningiomas are relatively uncommon type of intracranial meningiomas. Because of slow growth in the interhemispheric space, patients are asymptomatic for a long time. Impairment of visual function (unilateral or bilateral) is the dominant feature in clinical presentation. Visual field defects (inferior altitudinal defect, loss of central vision, generalised constriction of fields, unilateral hemianopia) are also common. Foster Kennedy syndrome occurs in only a small number of patients. Diplopia due to abducens palsy (false localising sign) is present in only 6% of the patients.

The most common signs are papilledema and optic atrophy. Papilledema is usually bilateral and may be associated with loss of vision. When papilledema is bilateral and asymmetric, the side of more pronounced edema doesn’t serve to localise the lesion. Unilateral or bilateral optic atrophy occurs in 30-70% of the patients.

Type 2 neurofibromatosis is a common association with multiple meningiomas. There are five microscopic subtypes of meningioma-synecytial, transitional, fibroblastic, angioblastic and malignant. Transitional meningiomas has 2 types of cells-plump polygonal cells and spindle shaped cells. Sometimes they contain psammoma bodies.

Cytogenetics: Patients with meningiomas, type 2 neurofibromatosis and breast cancer all share a deletion of tumor suppressor gene on the long arm of chromosome 22. Flow cytometry techniques have demonstrated that tumours which have proliferative index more than 20% have high recurrences.

Location: Convexity and parasagittal/falx locations are most common. Tuberculum sella, sphenoidal ridge and olfactory groove locations are rare.

Neuroimaging: On neuroimaging, meningiomas are typically smooth homogenous round or oval masses. Heterogeneity or mottling is suggestive of an angioblastic or malignant type. On T1-weighted images, 60-70% of meningiomas are isointense to gray matter. On T2-weighted images it may be isointense or slightly hyperintense. A clear peritumoral rim is seen in 50% of intracranial meningiomas appearing hypointense on T1-weighted images. Marked homogenous enhancement occurs with gadolinium contrast. A thickened tail of dural enhancement is common with falx and tentorial meningiomas. MRI imaging also plays an important role in postoperative surveillance for progression and recurrence.

Ocular examination: Preoperative documentation of vision, colour vision, field defects and fundus examination is important to assess postoperative visual outcome.
**Treatment:** Surgical excision is the treatment of choice. Complete resection is the key to prevent recurrence. If complete excision could not be performed, external beam radiotherapy can be used. Jaaskelainen found a recurrence rate of 19% at 20 years following complete resection. 4 Visual outcome following surgery is generally good. A study says visual acuity improved in 53% patients and remained stable in 38% and deteriorated in 7% patients. 5 This patient presented with defective vision in left eye and the vision was not regained because the optic nerve has progressed to atrophy.

**CONCLUSION**

As olfactory groove meningiomas are associated with high rates of optic atrophy, surgical excision at the earliest will salvage useful vision in these patients. As the visual symptoms prompt the patient to consult an ophthalmologist in most cases, it is the responsibility of the ophthalmologist to evaluate and refer the patient at the earliest.

**REFERENCES**

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