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CASE REPORT : OLFACTORY GROOVE MENINGIOMA

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Abstract

Background: Olfactory Groove Meningiomas (OGM) are a rare cause of olfactory dysfunction. OGMs are benign, slow-growing tumors that cause non-specific symptoms, such as headaches, olfactory impairment, and psychiatric symptoms, such as depression, personality changes, decreased cognitive function, visual problems, or seizures.

Aim: In this case report we would like to discuss about a rare case of olfactory groove meningioma with non-spesific symptoms presented in 47-year old female patient

Case report: A 47-year old female with progressive blurred vision in the right eye for 3 months. Negative light perception in the right eye and fundus of the right eye indicated papillary atrophy. The direct and indirect light reflexes were negative in the right eye. We found Strong homogenous contrast enhancement extraaxial lesion accompanied by multiple dural tails in the left frontal convexity UK approximately 3.2 x 2.8 x 3.1 cm, Tuberculum sellae approximately 2.7 x 2.9 x 3 cm. Cranial decompression, frontal bone reconstruction, and tumor removal were performed. It was found that there was microcystic growth of tumor tissue, consisting of proliferation of meningoethelial cells, round to oval nuclei, smooth chromatin, visible intranuclear inclusions

Discussion: OGM is a rare, benign tumor. Female patients were more likely to develop OGM than male patients. The ciliary ganglion of cranial nerve III may be affected by compression of the tumor, resulting in the absence of direct and indirect pupillary reflexes in the affected eyes.

Conclusion: OGM is a slow-growing tumor that does not show significant symptoms at an early stage, making early detection difficult.

Keyword: Olfactory Groove Meningioma, Blurred Vision, Meningioma

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Introduction

Meningiomas are the most frequent type of intracranial tumor, accounting for 20%-36% of all primary brain tumors.[1] Meningiomas account for 20%-30% of primary intracranial neoplasms in Africa and are more frequent in women.[2] Olfactory groove meningiomas (OGM) are a rare cause of olfactory dysfunction, accounting for 5%-18% of intracranial meningiomas.[3] In the United States, the prevalence of pathologically proven meningiomas is 97.5/100,000, with an incidence rate of 8.36 for females and 3.61 for males per 100 000 person-years.[4] OGMs are benign, slow-growing tumors that cause non-specific symptoms, such as headaches, olfactory impairment, and psychiatric symptoms, such as depression, personality changes, decreased cognitive function, visual problems, or seizures.[1,5]

Clinical presentation and diagnosis are frequently delayed because many patients are asymptomatic until the tumor grows to a significant size of > 4 cm, at which point the tumor may compress adjoining structures, such as the frontal lobe, optic nerve, and optic chiasm.[6] OGMs have a mean onset age of 54 years and a high female predominance. The most common presenting symptoms were headache (31%-86%), anosmia (57%-78%), and personality disturbances (48%-72%). Visual impairment (24%-61%), seizures (17%-35%), and intracranial hypertension (50.8%) were some of the other symptoms. Approximately 3%-12% of patients with OGM are diagnosed as a result of an unrelated abnormality on imaging.[7] In this case report, we discuss a rare case of olfactory groove meningioma with non-specific symptoms presented in a 47-year old female patient.[2,3,4]

Case report

A 47 year old female patient visited the Neurosurgery Clinic, NTB Provincial Hospital, a referral from the Eye Clinic with complaints of blurred vision. The patient visited an ophthalmologist because of blurriness in the right eye that had been felt for 3 months. There were no other complaints such as headaches, nausea, vomiting, or seizures. An ophthalmologist advised the patient to undergo a CT-Scan scan. The patient was referred to the eye clinic at the Provincial Hospital and underwent a CT scan. The CT-Scan results revealed a tumor; therefore, the patient was immediately referred to the neurosurgery department. The atypical symptoms of the patient led to a late diagnosis of the disease. the patients did not have a history of neoplasms. Patient is a housewife and this condition affected her daily activities.

On examination the general condition and general physical examination were within normal limits. On neurological examination, GCS E4V5M6. Upon examination of the N.II, we found negative light perception in the right eye, 6/40 in the left eye, narrowing of the visual field in the left eye, and papillary atrophy in the fundus of the right eye. Direct and indirect light reflexes in the right eye were negative, whereas in those the left eye were still within normal limits. Laboratory results, including complete blood count, liver function, kidney function, and electrolyte levels, were within normal values.

On imaging examination by Head CT scan, axial slice parallel to the OM line, slice interval 1.5 mm, clinically papillary atrophy, without contrast. The optic nerves are bilaterally symmetrical, no

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bulbar/retrobulber masses are visible, Giry and sulci are normal, Slight hyperdens suprasella lesion is visible measuring 4 cm x 3.8 cm with peritumoral edema in the left frontal area (hypodense lesion is visible in the right frontal area, normal ventricular system, median structure in the middle). With the impression of a slight hyperdense lesion in the suprasella measuring 4 cm x 3.8 cm with peritumoral edema in the left frontal impression of a suprasellar mass (Fig. 1)

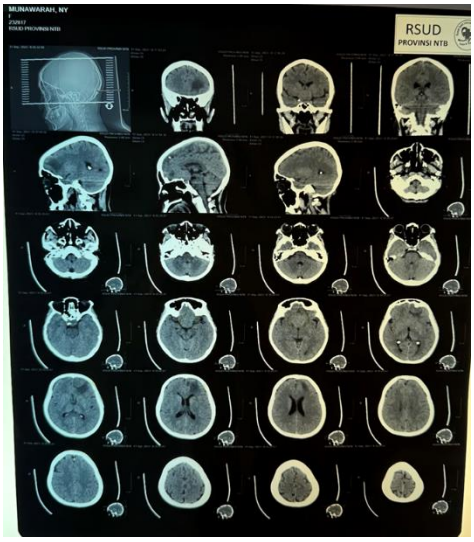

Figure 1 Head CT Scan showed suprasellar tumor measuring 4cmx3.8cm

To further confirm our diagnosis, we performed MRI examination of the head axial slice, T1FSE, T2 RFSE, FLCoronal T2RFSE, Sagittal T2RFSE, CORONAL T2 FLAIR without and with contrast, and MRA. We found Strong homogenous contrast enhancement extraaxial lesion accompanied by multiple dural tails in the left frontal convexity UK approximately 3.2 x 2.8 x 3.1 cm, Tuberculum sellae UK approximately 2.7 x 2.9 x 3 cm, Sulci and gyri normal, Ventricular system and cysterna within normal limits, Pons and cerebellum looks good, the pituitary looks good, there is no abnormal calcification, there is no midline shifting, the mastoid, orbit and right and left paranasal sinuses look good, thickening of the nasal cavity mucosa bilaterally, and MR angiography shows a patent circulus of Willis, no aneurysm or vascular malformation is seen. (fig.2) no aneurysm or vascular malformation

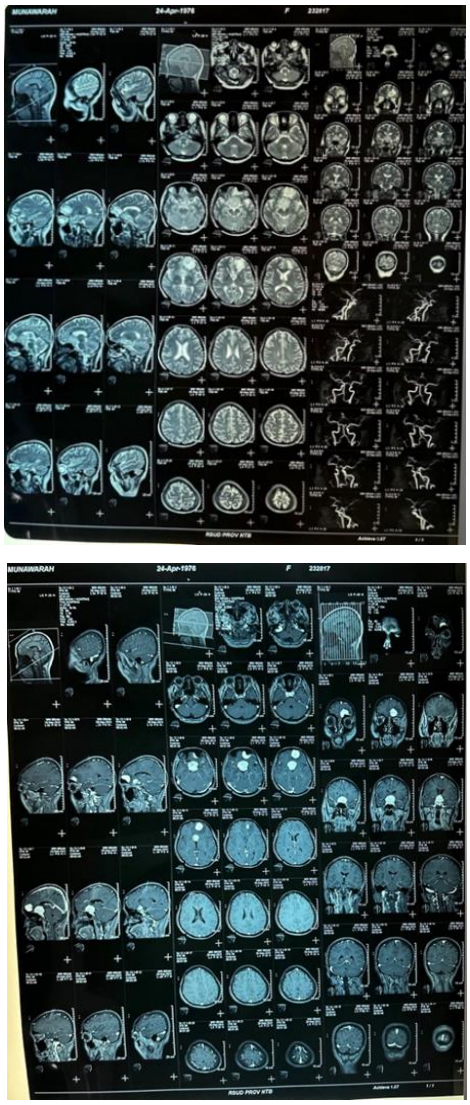

Figure 2 Head CT Scan showed no aneurysm or vascular malformation

We performed cranial decompression, frontal bone reconstruction, and removal of the brain tumor in this patient. Thereafter, we

took the sample to the histopathological department to examine tumor morphology.

Histological examination revealed microcystic growth of the tumor tissue, consisting of proliferation of meningoethelial cells, round to oval nuclei, smooth chromatin, and visible intranuclear inclusions. Among them, fibrous connective tissue appears which concluded that the tumor is ollfactory groove et tuberculum sellae meningioma and microcystic meningioma, WHO grade 1

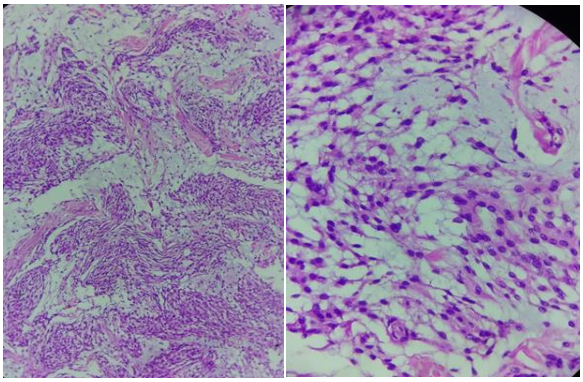

Figure 3 Histological Examination revealed microcystic growth of the tumor tissue, consisting of proliferation of meningoethelial cells, round to oval nuclei, smooth chromatin, and visible intranuclear inclusions.

Discussion

Olfactory groove meningiomas (OGMs) are a rare type of benign, slow-growing meningioma, accounting for 2% of all primary brain tumors, 4%-18% of all intracranial meningiomas, and 34% of anterior cranial fossa meningiomas. OGM arises from the covering cells of the arachnoid dura, located in the anterior cranial fossa above the cribriform plate. OGM will remain clinically latent during the early phase of tumor growth, causing the tumor to be large at the time of diagnosis.[8]

Our patient is a 47 year old woman, which is a risk factor. Several studies have reported a relationship between sex and meningioma incidence. This is due to the involvement of progesterone and estrogen in tumor development. The patient complained of blurry vision in the right eye that had been felt for 3 months before entering the hospital. OGM also has various symptoms with varying progression. Symptoms: Headache (31%-86%), anosmia (57%-78%), and personality changes (48%-72%) were the most common symptoms. Other symptoms can include visual disturbances (24%-61%), seizures (17%-35%), or intracranial hypertension (50.8%).[7,8]

On physical examination, we found that the patient had decreased vision in the right eye due to negative light perception and 6/40 vision in the left eye, and both direct and indirect pupillary reflexes in the right eye. These conditions indicate problems with the optic nerve and oculomotor nerve (accessory nerve-efferent nerve). This is caused by the tumor pressing on the area around the optic chiasma and the efferent pathway of the oculomotor nerve (ciliary ganglion).

From the CT results, a suprasellar mass was suspected; however, to provide clearer results, an MRI examination was performed. We found a mass in the tuberculum sellae area, with a volume of 23.49 cm3. OGM generally appears in the midline, but in some cases it can lean to one side. Most tumors are located on the floor of the anterior cranial fossa, extending from the crista gali to the tuberculum sella and can also extend to the nasal and orbital cavities. In some cases, OGM that grows posteriorly and tuberculum sella meningioma have similarities. However, the basic difference is that the OGM forces the optic nerve and optic chiasm downward and posteriorly as the tumor grows, whereas tuberculum sellae meningioma elevates the chiasm and shifts

the optic nerve superolaterally because the tumor is located subchiasmal. (adappa) In this patient, from the results of the operation, we found that the tumor tissue was pressing on the optic chiasm and optic nerve inferoposteriorly, which re-established the diagnosis of olfactory groove meningioma in our patient.

The results of histology and anatomical pathology showed that there was a microcystic meningioma with WHO grade, namely grade 1 (benign). In a recent study, grade I patients had a low recurrence rate, with a 5-year recurrence rate of 4% and a 10-year recurrence rate of 6%.[10] In addition, monitoring and follow-up such as radiotherapy can reduce the risk of recurrence.

Conclusion

Olfactory groove meningiomas are rare benign tumors. OGM presents with very general symptoms, making it difficult to diagnose early. Most OGMs are found to be in serious condition because of their slow progression and atypical symptoms. Magnetic resonance imaging (MRI) is the best modality to diagnose OGM. The treatment option for patients with OGM is generally tumor resection, but if the tumor is still small or if the patient's condition does not allow surgery, observation can be performed first. A combination of tumor resection therapy and radiotherapy can be used to obtain better results and also prevent tumor recurrence.

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