

Optic Nerve Glioma- Case Report

Fatimah Al Ghazal, Ebtihal Al Hulaimi, Hassan Al Abbad, Mohammad Al Maani

College of Medicine, King Faisal University, Saudi Arabia

Corresponding author: Fatimah Al Ghazal, Email: dr.f.alghazal@gmail.com

ABSTRACT

Background: Optic nerve gliomas (ONGs) are benign tumors that grow slowly.

Clinical Methods: They are most common in females and occur before age of 20 years. This case report of 10 years girl showed right eye loss of vision and proptosis for 2 months with no other medical problem or past medical history. **Clinical Findings:** A diagnosis of ONG was done using CT scan. The CT scan reported right sided fusiform intra orbital enlargement.

Conclusion: Referral to neurosurgery for consultation and further management was done.

INTRODUCTION

Optic nerve consists of about 1.2 million axons that are responsible of vision ⁽¹⁾. Optic nerve gliomas (ONGs) (also known as optic gliomas) are the most common tumors of the optic nerve. They involve the optic nerve or the optic chiasma and are usually polycystic tumors. Up to 30% of ONGs are associated with type 1 neurofibromatosis (NF1) ⁽²⁾. ONGs are rare slow growing benign (noncancerous) tumors. They are usually unilateral and occur most commonly in females ⁽³⁾. In spite of the fact that these tumors can occur at any age, they are most commonly occurred in the childhood (before age of 20 years), with a median age of 6.5 years and a mean age of 10.9 years ^(4, 5). Symptoms and signs of the ONGs include: proptosis (often combined with infradisplacement of the globe), decrease visual function, strabismus and optic disc swelling or pallor. No ocular to retinal pain complains in typical presentation ONGs. Some patients with ONGs may experience central retinal vein occlusion (CRVO), opticiliary shunt vessels, rubeosis iridis with neovascular glaucoma and venous stasis retinopathy due to chronic compression of the central retinal vein. In addition, acute loss of vision and development or worsening of proptosis may occur. Some ONGs are asymptomatic ^(6, 7).

Neurological examination may reveal partial or total loss of vision. There may also increase pressure in the brain. Computed tomography (CT) scans, magnetic resonance imaging (MRI) of the brain, and biopsies are used as a diagnostic studied in ONGs ⁽⁸⁾.

The aim of all treatment strategies is to reserve vision for as long as possible. Both surgery and radiations are two possible ways to treat ONGs.

Surgery is not always an option unless the tumor can be completely removed. Radiation therapy can be used before and after surgery ⁽⁹⁾. After treatment of ONGs Long-term side effects may occur, such as: learning disabilities, cognitive difficulties and impairments in growth ⁽¹⁰⁾.

CASE REPORT

We reported an interesting case of 10 years old girl child presented with painless outward protruding of the right eye combined with loss of vision in right eye for 2 months with no other medical problems. The girl submitted to detailed and comprehensive ocular examination. Visual acuity (VA) was measured first, where visual acuity in right eye is counting finger (near face), while the best-corrected visual acuity in left eye was 6/6.

Detailed anterior segment examination using slit lamp and torch light was done. The left eye was within normal limit. The right eye showed proptosis, pupil dilatation with positive relative afferent pupillary defect (RAPD)(**Figure 1**). Extra ocular muscle function (EOM) examination in the right eye showed 50% deficit of the right superior rectus muscle and 25% deficit of the right lateral rectus muscle. EOM of the left eye was full. No other positive signs.

Posterior fundus examination of right eye showed generalized optic disc pallor with partial optic atrophy. Venous tortuosity was also seen (**Figure 2**). With no other retinal signs. The left eye was within normal limit. Intraocular pressure (I.O.P) was 18 mm in the right eye and 16 mm in the left eye.

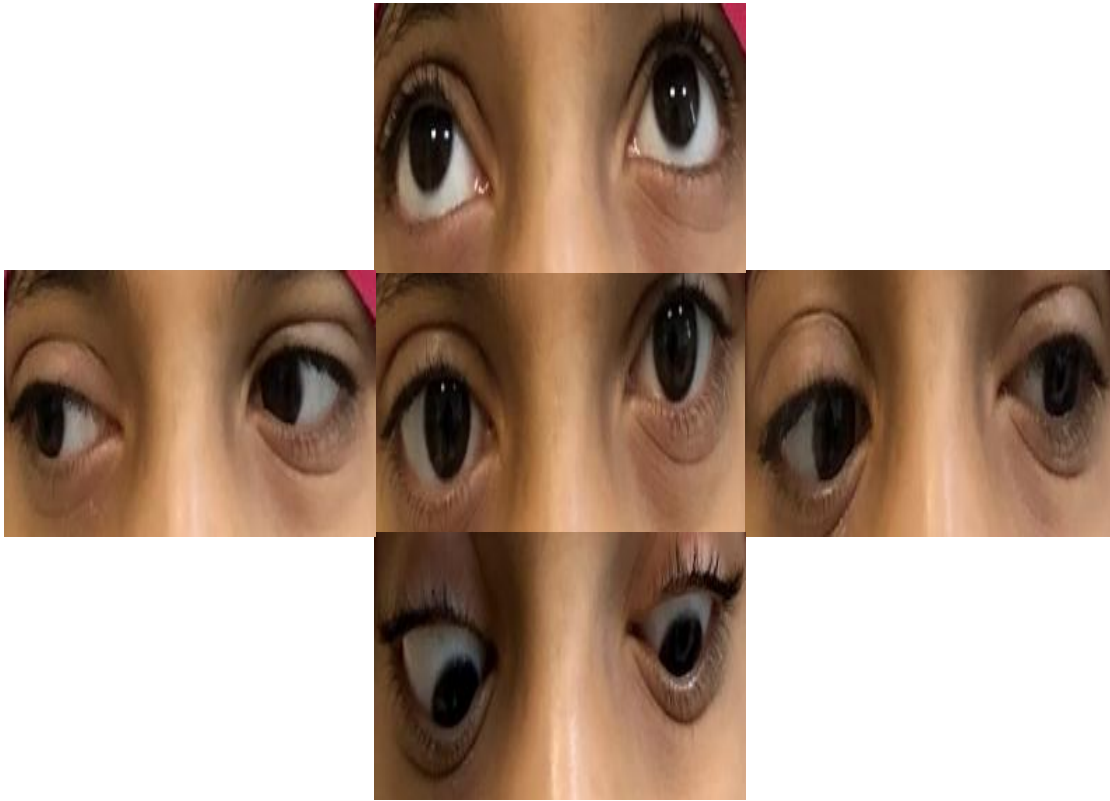


Figure 1: proptosis and limitation in movement of right eye in elevation and abduction

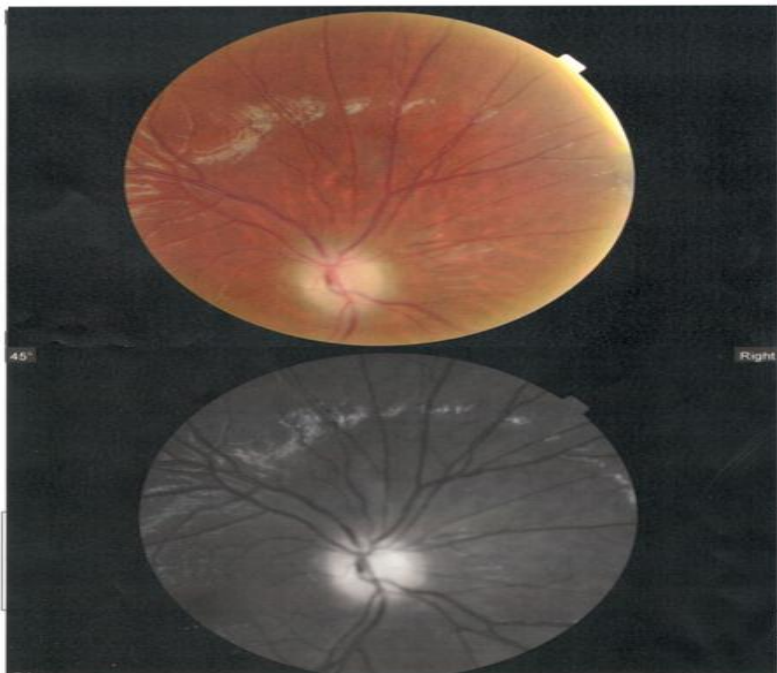


Figure 2: showing partial optic atrophy with venous tortuosity.

Computed tomography (CT) scan of the brain and orbit was done (**Figure 3**). The CT scan confirmed presence of optic nerve glioma (ONG). The fusiform enlargement of the right sided intra orbital part of optic nerve result in moderate right-side proptosis. Magnetic resonance imaging (MRI) was requested. The patient was referred to neurosurgeon for consultation further management.



Figure 3: computed tomography scan of the brain and orbit showing presence of glioma.

DISCUSSION

The differential diagnosis of a child with painless loss of vision, proptosis and RAPD included optic nerve glioma, optic neuritis, optic nerve meningioma, and Autosomal Dominant Optic Atrophy (ADOA) ⁽¹¹⁾. ONG have numerous ocular presentations, they may be asymptomatic or may present with proptosis or blindness through optic atrophy. Several modalities of treatment are available and ranging from a conservative treatment to a combination of chemotherapy, radiotherapy and/ or surgical removal ⁽¹⁾.

In this case report, the patient present with unilateral proptosis and loss of vision which is a typical presentation of ONG as **Tow et al.** ⁽⁶⁾ and **Sharma et al.** ⁽⁷⁾ mentioned in their studies that the age at the time of presentation was 10 years old. This was consistent with studies done by **North et al.** ⁽⁴⁾ and **Parsa et al.** ⁽⁵⁾ as they reported the most ONGs occur before age of 20 with mean age of 10.9. Unlike many reported cases with ONGs that was diagnosed with neurofibromatosis type one (NF1) ^(2,12). In this case report the 10 years girl was not found to have NF1 or any other medical problem. Full ophthalmological examination was done. To confirm the diagnosis CT scan of the brain and orbit was performed. **Naessens et al.** ⁽¹³⁾ mentioned in their case report about ONG that; the CT scan was helpful in diagnostic study and can provide important findings which cannot be acquired from other means of

diagnostic studies. The patient examination revealed disc pallor and proptosis, so she was referred to neurosurgery department for consultation.

CONCLUSION

Due to the wide variety of presentation, ONGs remain a great challenge to the ophthalmologists. It should be considered in the differential diagnosis in patients present with loss of vision and proptosis. Early diagnosis and treatment are important. The goal of management is preservation of vision. To reach a proper diagnosis, imaging studies by either CT scan and / or MRI must be done. Management of ONGs remains a multidisciplinary team. Referral for consultation and further management are needed.

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