Case Report

A rare case of persistent pupillary membrane associated with high myopia and amblyopia

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Abstract

Purpose: To present the management of a rare case of persistent pupillary membrane (PPM) associated with high myopia and amblyopia.

Case: A 12-year-old boy presented with progressive diminution of vision in the right eye since childhood. Examination (OD) showed several fine strands of iris attached to the collarette and to the anterior lens capsule with a clump of iris pigment adherent over it. Some of these strands even wrinkled on pupillary contraction. The patient was also examined on slit-lamp.The patient was operated for lens extraction with PCIOL implantation.

Results: The patient regained useful vision after surgery.

Conclusion: This is a rare case of persistent pupillary membrane associated with high axial myopia.

Keywords: persistent pupillary membrane, myopia, amblyopia

Introduction

PPM is the remnant of fetal membrane, persisting as strands across the pupil. It floats as free edges, bridges the pupil partially or completely, or is attached to the anterior lens capsule or to the posterior surface of the cornea.

Patient and methods

The patient in our study reported to us in a routine OPD of the Gandhi Eye Hospital, Aligarh, India. A 12-year-old male presented to us with progressive diminution of vision in the right eye since childhood. He had no history of trauma, pain, redness, discharge or surgery to either eye. There was no history suggestive of any systemic illness or chronic illness in the past, similar complaints in the family or any history of consanguinity.

Received: 17.11.2009 Accepted: 23.12.2009
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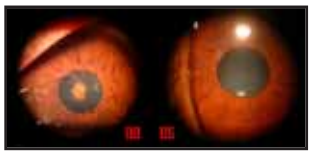
The slight-lamp bio-microscopy of the right eye showed several fine strands of iris tissue attached to the collarette of the iris and anterior lens capsule with a clump of iris pigment adherent to the anterior lens surface, forming a central opacity (Fig 1). Some of these strands even wrinkled on pupillary contraction. The vision was FC ½ meter in the right eye, not improving with a pin hole and correcting to 2/60 with -7.5DS/- 4.5DCyl at 90^0.



Persistent pupillary membrane forming a central opacity in right eye. Normal Left Pupil and iris.

SLE (OS) showed normal iris pattern and pupil size with a normal reaction to light. The vision was 6/9 correcting to 6/6 with +0.5DS. The fundus (OD) was slightly tessellated with a large disc, a cup to disc ratio of 0.3:1 and temporal crescent. The macula was healthy. The fundus (OS) was within normal limits.

Keratometry and A-scan readings were as follows.

(OD) K_1 - 42.5D, K_2 – 40.0D, AC Depth - 3.45 mm, AL - 26.52 mm.

(OS) K_1 - 42.0 D, K_2 - 40.5D, AC Depth - 3.40 mm, AL – 26.52mm.

Thereafter, all routine investigations were done in the form of a complete haemogram, renal function test, liver function test, blood sugar (both fasting and post prandial) and B-Scan (right eye) which showed

Hemoglobin:	11.0 g%
TLC:	7200 cells\cu.mm
DLC:	N-77, L-23, B-0, M-0, E-0
ESR:	23 mm in I hour
Blood Urea:	28 mg%
S. Creatinine:	0.78 mg%
S. Bilirubin:	0.9 mg% D: 0.2 mg%, ID: 0.7 mg%
SGOT:	33 mg%
SGPT:	40 mg%
Blood Sugar (F):	78 mg%
Blood Sugar (PP):	126 mg%

B-Scan (RE): The eyeball was of normal shape and size. The lens was not cataractous. The posterior capsule was intact. The vitreous was anechoic. There was no retinal abnormality. The optic nerve was normally echogenic.

The patient underwent lens extraction with PCIOL implantation and excision of all iris strands in the pupillary area. The surgery was uncomplicated. Postoperatively, the patient was put on combination of topical moxifloxacin with prednisolone eye drop 1 hourly, and called for regular follow-up. His best corrected visual acuity (six week post operative) was 6/60. The poor visual acuity was attributed to amblyopia. Now the patient is on anti-amblyopia therapy but there is no improvement till date.

Discussion

The PPM is a common finding in most of the normal people and is usually asymptomatic, rarely affecting vision. During the early development of the eye, the crystalline lens is nourished by the tunica vasculosa lentis, which is derived from the branches of the hyaloid artery called the vasa hyaloidea propria. The pupillary membrane is derived primarily from the vascular arcades that bud from the annular vessel that skirts the rim of the developing neuroectodermal optic cup. At the fifth month of gestation, the vascular arcades of the pupillary membrane reach the centre of the pupil. Involution and atrophy of the pupillary membrane and associated anterior iris stroma commences during the sixth month and proceeds peripherally forming the thinner pupillary zone and the collarette of the adult iris. Located in the collarette, the lesser arterial circle of the iris is derived from the vessels of the pupillary membrane (Daniel *et al* 2000).

Persistent pupillary membrane is the most frequently encountered ocular "congenital anomaly" in general ophthalmologic practice (Waardenburg *et al* 1961). Several variations of persistent pupillary membrane are recognized (Duke-Elder, 1964). Duke-Elder classified membranes that are attached solely to the iris as type 1 (Duke-Elder, 1964).

Irido-lenticular adhesions characterize type 2 membranes. In a sub-variant of type 2, pigmented dendritic iris stromal melanocytes, singly and in clumps, are situated aberrantly on the anterior lens capsule. These pigmented stars of the anterior lens capsule are often called "chicken tracks". Type 3 membranes, attached to the cornea, typically occur in Axenfeld-Rieger syndrome. Pure capsular opacities associated with persistent pupillary membranes or epicapsular stars are very rare. They are congenital in origin, do not affect vision and may be nonaxial (Gholam *et al* 1987). If they occlude the pupil, they may be photo-disrupted successfully with the YAG laser (Vega LF *et al* 1987). Unilaterality and poor initial visual acuity are indicators of a poor visual outcome. Surgery is effective when the opaque membrane retards visual maturation and Yag Laser is not possible. Surgery can be done by small clear-corneal incision (Tsai yi-yu & Chiang chun-chi, 2004). Close follow-up with evaluation of visual acuity and refractive status is mandatory because this condition can lead to deprivation amblyopia and anisometropic amblyopia (Lee SM *et al* 2004).

Our case was one of the rare sub-variants of the PPM (type 2 membranous) which leaves brown pigments over the center of the lens, associated with unilateral axial myopia and amblyopia.

Conclusion

The persistent pupillary membrane can be associated with high axial myopia and amblyopia. Surgical management with clear lens extraction and PCIOL implantation and excision of all iris strands in pupillary area can result in improvement of the visual acuity if amblyopia therapy is initiated postoperatively.

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Source of support: nil. Conflict of interest: none