

Case Report

Adie's pupil: A peculiar case in young pilot

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A 27 years old male helicopter pilot presented with delayed adaptation to darkness in his right eye, increased glare while flying over snow and disparity in focus of two eyes, leading to reading difficulties after sometime. Based on his clinical history and detailed eye examination, he was detected to be a case of Acquired Adie's pupil, which otherwise is more frequently seen in women aged between 20-40 years with features of tonic pupil along with absence of knee jerk. This case report discusses the mechanism of visual impairment, various implications of Adie's pupil in flying crew, its management, follow up and disposal.

Keywords: Tonic pupil; ophthalmic disorders in aircrew; iris sphincter; photochromatic glasses.

Adie's syndrome is a form of tonic pupil where no local cause for the denervation is evident and there is no peripheral neuropathy to account for the tendon areflexia.

A tonic pupil is seen more frequently in women aged 20 to 40 years, with less than 30% of those affected being men. It is usually unilateral and only 10% have bilateral involvement [1]. There is only a trace reaction to direct light when examined under slit lamp in 90% of cases [2]. The pupil response to weak parasympathetic agents (0.1% Pilocarpine) [3] is marked. There is slow tonic constriction and redilatation to near stimulus. 90% of these patients have diminished or absent reflexes, with no motor or sensory

deficit, affecting legs and arms, also called "Benign Areflexia". Many of these patients may have impaired corneal sensations possibly due to damage to afferent sensory nerves from cornea, which travel with short ciliary nerves and pass through ciliary ganglion.

The patient is generally asymptomatic. However, he may present with blurred near vision or

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uneasiness. The dilated pupil slowly comes down until the anisocoria is hardly noticeable. Tonicity of accommodation may sometimes develop.

The cause is obscure in most cases. However, viral infections, trauma, ischaemic episodes involving orbital circulation, radiation have all been implicated. Cause for areflexia is still not clear.

A case of Adie's Pupil in a young helicopter pilot who presented with delayed adaptation to darkness, glare and disparity in focusing is reported below.

Case History

A 27 years old helicopter pilot presented with the following complaints: -

- (a) Right Eye appeared to have delayed adaptation to darkness and when once adapted showed better sight than the left eye.
- (b) Increased glare when flying over snow bound terrain only.
- (c) Disparity in focus between the two eyes leading to difficulty in reading after sometime.

The officer denied history of trauma, pain and redness of eye, no history of use of medicine in recent past, was a non-diabetic, but could correlate the onset of his complaints to recurrent severe attacks of conjunctivitis two years back.

General and systemic examination were non-contributory. Deep tendon reflexes were normal, including knee and ankle.

Ocular examination: Both eyes had 6/6 and N-5 vision. Refraction revealed right eye

hypermetropic with +0.5 D spherical and left eye myopic with -0.25 D spherical.

Anterior segment: The right eye revealed a pupil 5 mm in size, circular and reacting sluggishly to light, showing a typical vermiform movement, particularly in the lower half. There was no pupillary response on near vision. Left eye pupil was 3 mm and reacting normally to light direct and consensual, and near stimulus. There were no features of uveitis or its sequelae. IOP in both eyes was normal. Corneal sensations were normal.

Fundi revealed no abnormality.

Accommodation and near point: Right eye was 18 cms, left eye 08 cms, muscle balance revealed 24 D exophoria for distance and 84 D for near at 33 cms by maddox rod.

A clinical trial of response to 0.1% Pilocarpine showed marked constriction in the right eye. The officer was prescribed correction with +0.5 D (spherical) right eye and -0.25 D (spherical) in the left eye, and he claimed immediate and significant relief in his symptoms while reading. He was recommended photochromatic glasses and has no complaints thereafter. He was diagnosed as a case of Acquired Adie's Pupil and sent back with full flying category with advice to be reviewed after three months.

Discussion

The case described above is peculiar. Adie's Pupil is generally asymptomatic. However, an observant individual, particular about his sight, has been forced to seek advice.

The dilated pupil causes the retinal rods to be

decompensated and hence when he enters a dark room (Cinema Hall in this case) he complains of near blindness in the eye. After the adaptation process is completed the already dilated pupil permits more light to enter this eye and results in better vision. The large pupil is also the sole cause of glare in the right eye as recorded while flying in snowbound area. The anisometropia and decreased accommodation of 0.75 D has been the cause of the patient's discomfort on reading/near work. Correction of the same has relieved the confusion of ciliary muscle activity and provided relief.

Adie's pupil is defined as a tonic dilated pupil occurring more frequently among females. Tonic pupil alongwith absence of knee jerks is called Adie's pupil. This association, however, may be absent. It can be caused by a variety of viral conditions, ischaemic episodes involving orbital circulation, physical injuries including radiation, orbital surgery, wide spread neuropathy eg diabetes, alcoholism etc. This leads to injury to

the ciliary ganglion resulting in pupilomotor and accommodative abnormalities. these may be followed by an aberrant regeneration within the ciliary ganglion wherein parasympathetic fibres originally for the ciliary body now get directed to the pupillary sphincters. A few cases may complain of slower than normal accommodation when fixation is changed from distance to near or vice versa. With an advance in age as the parasympathetic tone increases, the difference in pupillary size may spontaneously reduce.

References

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