Original Article

Idiopathic central serous retinopathy: Aeromedical implications

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Idiopathic central serous retinopathy, a disease of unknown etiology with no definitive treatment or clinical course presents a clinical dilemma when it occurs in flying personnel. Only one report exists in the aeromedical literature describing the clinical details and aeromedical implications of the disease among aviators. This paper discusses the incidence of the disease in two fighter pilots in the Indian Air Force (IAF) and its aeromedical significance, the paper also stresses on the need to report the occurrence of such diseases in aircrew to enable sound aeromedical disposal.

Keywords: Central scotoma, aircrew fitness, ophthalmic evaluation.

Idiopathic central serous retinopathy, (CSR) [1,2] has been recognised as a clinical entity for more than 100 years. A disease of unknown etiology, it is characterised by a comparatively sudden loss of central vision which may be recurrent. It occurs in healthy young and early middle aged people, predominantly males, the patients noticing distorted and reduced image sizes (micropsia) in the affected eye and experiencing a central scotoma. The initial fall of acuity may be profound, but recovery at least from the first attack is common. Fundus examination reveals a circumscribed circular area of shallow retinal elevation in the macular region, which is slightly darker in colour than normal. Subretinal precipitates may be present and the foveal reflex may be absent.

Fluorescein angiography studies by Gass [1,3] have demonstrated the presence of small focal areas of increased capillary permeability in the choriocapillaries that were responsible for serous exudation beneath the retinal pigment epithelium and neurosensory retina.

The author's interest in this entity was aroused by the diagnosis of CSR in one of the senior aviators in the base. Also was the coincidental demonstration of adverse effects to the drugs commonly used in anti tubercular treatment (ATT). Soon thereafter, one more case of CSR in a pilot was observed. In the last 5 years, there have been just 2 cases of CSR in the flying personnel, and although both have not yet been returned to flying, the case reports are being presented with the aim of discussing the clinical profile of the disease, aeromedical disposal, at the same time citing the only reported article on the subject [4].

Case Reports

Case 1:

35 years old aviator reported to the SSQ with complaints of blurring of vision and irregular image formation in the left eye of about 15 days duration. He was referred to the local military hospital for ophthalmological consultation and was detected to have distant vision right eye (RE) 6/6 and left eye (LE) 6/12. Fundus findings were suggestive of CSR LE. He gave no history of trauma, pain or redness of eyes. He was a non smoker, non vegetarian and consumed alcohol in moderation. He was put on NSAIDs, antibiotics and steroids with no improvement. He was then transferred to a referral hospital for further investigation and manage-

ment. All relevant investigations carried out were within normal limits except for Mantoux Test (Mx) which was positive (16mm × 16mm). Fluorescein angiography revealed a single large leak in the macular area, superiotemporal to the fovea in the left eye. In the right eye there was a small hyperfluorescent spot superiotemporal to the fovea (? pigment epithelium defect). Fundus examination revealed a clear media, with normal disc and vessels and a small hyperpigmented patch in the macula just superiotemporal to the fovea. There was no evidence of macular edema with punctuate golden yellow coloured dots. Amsler Grid showed haziness in the nasal half of the grid in LE. Intra ocular pressure (IOP) was normal in both eyes.

He was also reviewed by the Chest Physician who in view of the positive Mx was of the opinion that the individual would benefit by a course of Anti Tubercular Treatment (ATT). He was put on ATT with rifampicin, pyrazinamide (PZN) and isoniazid(INH)). On the second day of ATT he developed jaundice with a serum bilirubin of 4.0 mg%. ATT was stopped. When ATT (same regime) was restarted after 10 days, the individual again developed jaundice on the third day. In view of his intolerance to STC he was discharged with the advice to take INH and ethambutol for 18 months.

The officer worried of the long treatment prescribed and his flying career, consulted a senior ophthalmologist at Dr.Rajendra Prasad Institute of Ophthalmological Sciences, Delhi, and was advised rifampicin 450 mg OD and INH 300 mg OD for 6 months. The individual did not show any adverse reactions to this drug regime and continued Cap Rifampicin 600 mg OD and Tab INH 300 mg OD (decreased dose of rifampicin to start with which was later increased to rifampicin 600 mg OD).

The individual was placed in a non-flying medical category for observation for 12 weeks initially which was extended thereafter.

Case 2:

37 year old fighter pilot reported with gradually decreasing vision LE of 2-3 weeks duration. He was referred to the Eye Specialist who diagnosed him as a case of CSR LE. Investigations revealed an ESR of 6 mm and Mx 16 × 16mm. Chest radiograph showed small infiltrative lesions both upper zone. His DV was LE 6/18 and RE 6/6 (P). Fundus examination revealed macular edema with dull ring reflex. He was put on STC for 6 months (INH+PZN+ Rifampicin). He was placed in a non-flying medical category for 24 weeks.

On completion of ATT and expiry of the initial medical category he was reviewed. His vision had improved to 6/9 LE and 6/6 RE. However, in view of the recently completed ATT, he was recommended to be observed in non-flying medical category for another 24 weeks.

Aeromedical Implications

Idiopathic central serous retinopathy is characterised by an abnormal focal leakage of serous fluids from the choriocapillaries [1]. The fluid passes through Bruchs membrane into the subpigment epithelium space, where it causes a localised detachment of the retinal pigment epithelium [3]. The latter typically appears as a small, round or oval yellowish or yellow gray spot or mound usually less than one fourth disc diameter in size [1]. The localised retinal pigment epithelium detachment may be impossible to detect without the aid of fluorescein fundoscopy [2]. From the subpigment epithelium space the serous fluid passes through the retinal pigment epithelium, to the subretinal space, where it causes the more apparent serous detachment of the sensory retina [3]. It is the latter which accounts for the characteristic shallow elevation of the retina in this disease.

With a disease, whose etiology is not known, it is imperative that sufficient literature is available

on which decision making can be made possible especially involving flying personnel. An analysis of the clinical findings and the aeromedical disposal in the only article available in aeromedical literature [4] revealed that 50% of the 16 cases reported in the study revealed defects in depth perception at some time during the course of the disease. In only two of these 16 cases did the flight surgeon perform the depth perception test during the acute episode. The Amsler Grid test showing presence of distortions in the lines was performed in one case only. Of interest is also the finding of monocular color vision defects-eye with the disease manifesting tritanopic (blue yellow) defect, while the fellow eye had normal color vision. This has not been documented in our cases, who also did not undergo depth perception test. Recovered visual acuity in 88% of the eyes was 6/6. However, the report does not mention the time duration after which the acuity improved. The study also does not mention the period of off flying/restricted flying in the above cases, which is an important aspect. The report does not also discuss the treatment given to these cases, nor any of the tests/treatment for any tubercular pathology elsewhere in the body. Twelve patients were returned to flying status with a waiver once their disease was inactive, one was not returned to flying because of a concomitant unrelated non ophthalmological disease. Three patients were not returned to flying status because of residual visual defects. It is interesting to note that the patients with visual acuity of (20/20 =6/6) still had residual defects in static perimetry and Amsler grid distortions. It is suggested that presence of small defects in static perimetry and the Amsler grid, by themselves do not contraindicate a return to flying status.

Criteria which significantly affect recommendations for return to flying status as suggested by Epstein et al [4] include activity of disease, visual acuity, kinetic visual field and depth perception whereas those residua which should not prevent return to flying status include macular pigment alteration, pseudostaining on fluorescein fundoscopy, small Amsler grid distortions, small static perimetry defects and monocular colour vision defects.

With the above background the significance of reporting and discussing such disease entities whose occurrence among aviators is not so frequent, becomes evident. Unless literature is available and made use of, flexibility in dealing with such cases will not arise, and certain important aspects may be missed e.g. the importance of depth perception and monocular colour vision testing. With such reported cases in our own flying population serving as a data base, the task of the concerned aeromedical examiner will become easier and will be based on sound aeromedical attributes.

References

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