

*Case Report*

Extensive Photic Maculopathy- Drug Induced Phototoxic Exudative Maculopathy- A Case Report

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ABSTRACT

Welder's arc maculopathy or photic maculopathy is a result of photothermal and photochemical effect of visible and IR-A radiation from the welder's arc on the macula. The extent of damage depends upon the duration of exposure, intensity of radiation and photosensitivity of exposed retina. In literature not many cases of welder's arc maculopathy secondary to photosensitizing drugs have been reported. We report a case of 65 year old male on oral benzodiazepine for last eight year, presenting with bilateral macular burns with large bilateral exudative subretinal neovascularization and severe visual loss secondary to arc light exposure for a few seconds. The case assumes significance because of the size of exudative neovascular membrane of more than 2 disc diameters being more than ever reported earlier, despite of extremely short exposure emphasizing the concern and caution in chronic prescription of photosensitizing drugs. The case provides important learning point to anyone prescribing such drugs on routine basis or for long time.

Key words- Welder's arc, Maculopathy, Photosensitivity, Benzodiazepine, Phototoxicity.

INTRODUCTION

Ocular injuries from welder's arc radiation can result in photophthalmia, keratoconjunctivitis and glass blower's cataract. Retinal injuries from welding arc radiation though previously reported are not commonly seen. While duration of exposure and intensity of radiation are significant factors determining the extent of burn, retinal damage may be more pronounced by accumulation of photosensitizing drugs in the pigmentary retinal layer with resultant increased photosensitivity. Here we report a case of bilateral extensive photic welders' arc maculopathy, with secondary subretinal neovascularization of exudative type in a

patient on oral benzodiazepine for last eight years, with persistent bilateral severe visual impairment even after six months of accidental exposure.

CASE REPORT

A 65 year old male, motor garage owner by profession, previously with normal visual acuity, presented in our hospital with severe progressive diminution of vision and progressive scotomas in both the eyes for the last 6 months, following exposure to the strong light of electric welder's arc for a few seconds from about 1 meter distance. Immediately after exposure there was blurring of vision and black spots in front of

both eyes, which persisted and gradually worsened in the weeks following exposure. On taking detailed history we found that his visual complaints had stabilized for the last 2 months and at no time he had complaints of pain or symptoms of ocular surface inflammation. On taking history of drug treatment, the patient gave history of anxiety neurosis for which he was being treated with benzodiazepine, oral alprazolam 0.5mg every night with occasional tab diazepam 1 mg during acute attacks for the last eight years, apart from which there was no significant medical or drug history.



Fig.1: Large Fibrous macular scar right eye.



Fig.2: Fibrous macular scar with pigmentary mottling left eye.

Visual acuity at presentation was 1/60 in right eye and 6/60 in left eye by snellen chart, with no improvement by pinhole or glasses. Amsler grid examination

revealed large central positive scotomas in both the eyes and on automated perimetry, there was generalized suppression of sensitivity in the left eye. HFA could not be performed in the right eye due to poor visual acuity.

On examination the anterior segment was normal, whereas posterior segment revealed large well-defined area of macular scarring, with exudative subretinal neovascularization about 1.5 disc diameter in left eye and about 2 disc diameter in the right eye, with pigmentary mottling around the margins of the lesions. The surrounding retina and overlying vitreous was normal. Fundus fluorescein angiography revealed diffuse hyperfluorescent staining of scar tissue in the macula involving the FAZ in the early and intermediate phase, which persisted in the late phase along with diffuse mild leakages from the SRNVM in the late phase and blocked fluorescence in areas of pigmentary mottling. The findings were further confirmed by spectral domain O.C.T and patient advised bilateral intravitreal anti VEGF injection and photodynamic Laser therapy.

DISCUSSION

The prevalence and seriousness of damage to the ocular surface, lens or retina by welders arc depends on the intensity and power of emitted radiations, duration of exposure as well as the photosensitivity of the exposed retina. [1] Welding arc emits a vast range of radiation, of which the visible and infrared radiation (400-1400nm) is absorbed by the retinal pigment epithelium and photoreceptors mainly cones. This results in thermal and photochemical damage which may be permanent and sight threatening. [2,3] Various commonly used drugs for e.g. phenothiazines, benzodiazepines, hydrochlorothiazide, furosemide and allopurinol have photosensitizing potential. These drugs get deposited in the retinal pigment epithelium to varying extent increasing the

photosensitivity of retina and making it more prone to photic damage. [4] Reports of phototoxic retinal damage following incidental camera flash light, operating microscope light and welder's arc exposure, in patients on systemic drugs with photosensitizing potential, commonly prescribed for systemic disorders e.g. gout, hypertension, anxiety have been reported previously though not very commonly. [5] In our case study there is a history of exposure of only few seconds, yet the damage is extensive implicating the photosensitization which may be attributed to intake of oral alprazolam and diazepam for the last 8 years.

Typically, in patients with arc maculopathy the lesion is roughly 200 microns slightly raised yellowish area of retinal edema gradually being replaced by a small macular hole or chorioretinal scar. [6] The peculiar feature in our case is that the size of macular involvement is extensive being more than 1.5 disc diameter in left eye and 2 disc diameter in right eye due to secondary formation of inflammatory exudative SRNVM post arc light exposure. This bilateral large macular scarring almost ten times larger than that in previous reports, after such a short duration of exposure has never been reported previously. In majority of the previously reported cases the retinal damage resulted in a small macular hole or a scar with either no permanent visual damage or only visual impairment. [2,5] In our case, the most probable cause for the extensive macular damage and severe visual impairment could be attributed to deposition of chronically used benzodiazepines in the retinal pigment epithelium over the years, increasing the photosensitivity of exposed

retina with resultant photic damage inducing exudative inflammation by activation of the inflammatory cascade. Thus, emphasis should be laid by the doctor to thoroughly enquire about patients' drug history and properly inform them regarding the potential risk of retinal damage on bright light exposure, if being treated by any of the drugs with phototoxic potential. Some of these drugs are being prescribed for very commonly prevailing systemic diseases like gout, hypertension, diabetes, and anxiety neurosis. Patients on photosensitizing drugs should be advised to avoid ocular bright light exposure in their profession or otherwise and extra precautions to be taken by them under unavoidable circumstances, to avoid such visual accidents.

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