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Case Report

Choroidal Neovascular Membrane (CNVM) Post Nd:YAG Capsulotomy: A Rare Case Report

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Abstract

A fifty six years old male presented with diminution of vision ten days after Nd:YAG (Neodymium yttrium aluminium garnet) laser for posterior capsular opacification (PCO). On examination, patient had developed Choroidal neovascularization (CNV) along with sub-retinal fluid (SRF) post laser treatment. Patient was advised Anti-Vascular Endothelial Growth Factor (VEGF) injection for the same. CNV was regressed and SRF was resolved post injection.

Keywords: CNVM; Nd:YAG Laser; Capsulotomy

Introduction

Choroidal Neovascular membrane (CNVM) post Nd:YAG capsulotomy is not uncommon. Patients usually presents with visual disturbance. The prognosis depends on the extent of exposure of laser as well as its characteristics (power, type, spot size, wavelength). Damage to retina is usually caused either through direct exposure, or due to a reflected beam [1-3]. This is a case report of patient who had an accidental Nd:YAG laser induced macular injury; which lead to formation of CNVM which was treated by intravitreal Ranibizumab injection.

Case History

A fifty six years old male presented to the Outpatient department (OPD) with chief complaints of diminution of vision. Presenting complaint started ten days after Nd:YAG laser was done for posterior capsular opacification (PCO).

Best corrected visual acuity (BCVA) was 20/60 for distance and N18 for near in right eye prior to laser procedure. While, left eye BCVA was 20/20 and N6.

Laser wavelength was 1064 nm with ten shots of 6 milli joule power in each shot.

Immediately post laser procedure, patient's BCVA in right eye improved to 20/20 and N6 for distance and near. Patient was prescribed eyedrop Loteprednol etabonate 0.5% for four times a day for one week.

Patient presented to OPD after ten days with complaint of diminution of vision in right eye with BCVA in right eye being 20/60 for distance and N18 for near.

On examination, anterior segment findings were within normal limit with normal pupillary reflex and posterior chamber intraocular lenses in both the eyes.

On fundus examination of right eye, Optic disc was normal in size, shape with round, regular and well-defined margins with cup disc ratio 0.4:1. A yellowish lesion of around half disc diameter was noted at fovea along with subretinal fluid (SRF), which was suggestive of CNVM with foveal reflex absent. Rest of the posterior pole and peripheral fundus was within normal limit (Figure 1A).

Optical coherence tomography (OCT) shows a normal vitreoretinal interface with obliteration of foveal contour. SRF at fovea with hyper-reflective CNVM complex is seen along with thickened and irregular retinal pigment epithelium – Bruch's membrane – choriocapillaris complex (Figure 1B).

OCT- Angiography (OCT-A) shows a normal superifical (Figure 1C) and deep capillary (Figure 1D) vasculature scan while outer retinal scan shows a dot like hyper-reflectivity (Figure 1E) suggestive of new vessel complex which corresponds.

To the shape of the macular injury with laser spot. Chorio-capillary scan shows hypo-reflectivity at the site of CNVM (Figure 1F).

Patient was advised intravitreal Ranibizumab injection for the same.

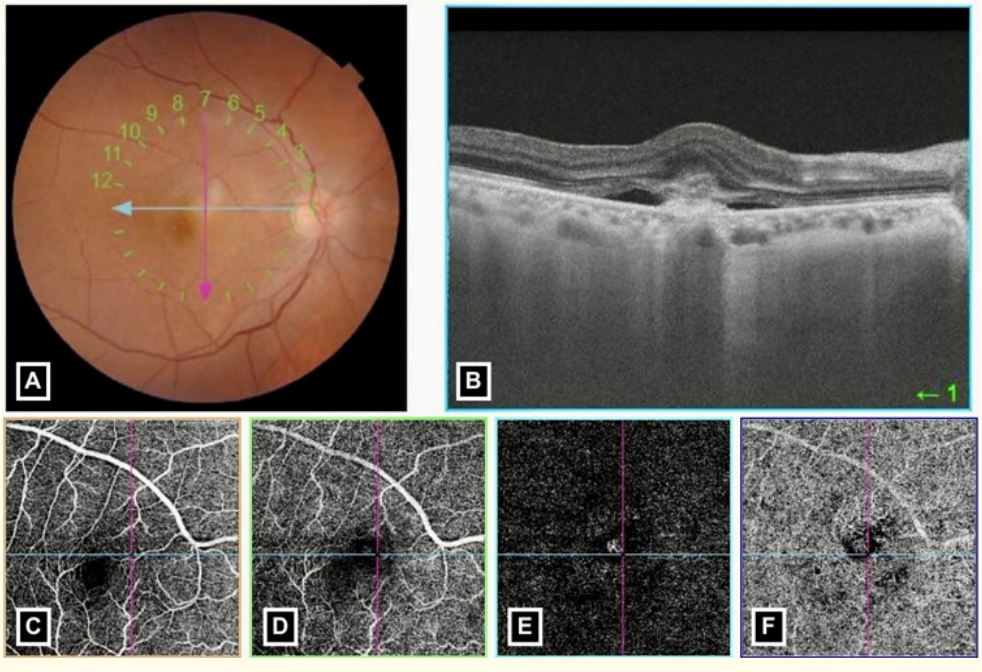

Figure 1: Figure 1A, Fundus photo of right eye showing a yellowish lesion at fovea along with subretinal fluid (SRF), suggestive of CNVM with foveal reflex absent. Figure 1B, OCT shows obliteration of foveal contour. SRF at fovea with hyper-reflective CNVM complex noted along with thickened and irregular retinal pigment epithelium – Bruch's membrane – choriocapillaris complex. Figure 1C-D, OCT-A, showed a normal superficial (Figure 1C) and deep capillary (Figure 1D) vasculature scan while outer retinal scan shows a dot like hyper-reflectivity (Figure 1E) suggestive of new vessel complex corresponding to the shape of the macular injury with laser spot. Chorio-capillary scan shows hypo-reflectivity at the site of CNVM. (Figure 1F).

Discussion

As Nd:YAG laser is commonly utilized in the treatment of various ocular conditions. Quite a few complications have been associated with it, namely, CNVM, macular hole, epiretinal membrane, and pre-retinal, retinal or sub-retinal hemorrhage [2].

The Nd:YAG energy is primarily absorbed by melanin which is located in the RPE and causes tissue ionization, plasma formation, and an acoustic shock wave. The shock wave may spread centrifugally, resulting into mechanical disruption of the surrounding retina, including the RPE and choroid. This series of events eventually leads to release of inflammatory mediators from the damaged cells directly that subsequently leads to collateral damage of neighbouring cells [3,5].

It is speculated that a defect in Bruch's membrane as a result of laser injury, leads to development of CNV [4,6-8] . Other hypothesis of CNV formation involves choroidal ischemia following laser injury along with the wound healing process which will act as a stimulus for inflammation, angiogenesis and matrix remodelling. The release of angiogenic factors from ischemic tissue may compensate for choroidal hypoperfusion [4,6-8].

In our case, CNVM had evidently developed post macular injury to laser and responded well to the standard anti-VEGF treatment.

Few isolated case report [9] and case series [10] have reported development of CNVM post laser for PCO but ours is a unique report as it has OCT-A imaging as a part of investigation modality which none of the above reports had.

Conclusion

As retinal or macular injuries are not uncommon after Nd:YAG capsulotomy, one must be very careful while focussing over the desired area in order to avoid the inadvertent injury. Also care should be taken while setting the power of the laser and should be kept at minimum level which would get the job done and in turn reduces the chances of retinal injury.

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