

Full Thickness Macular Hole following Intravitreal Bevacizumab for DME: A Case Report

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Introduction

Anti VEGF agents have been in use for treatment of DME for quite sometime now. Ranibizumab is FDA approved while Bevacizumab is widely used as an off-label drug with comparable amount of effectiveness and safety. The potential side effects are few and are either associated to the drug injection procedure (mainly

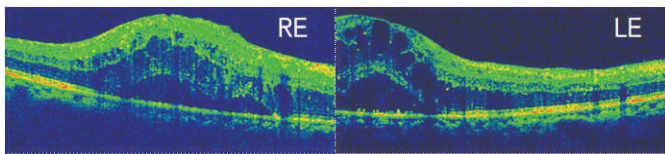
or to the drug. RPE tears, retinal ischemia, ocular irritation and cataract progression are some of the main complications.⁽¹⁾ Other potential adverse effects are very rare, and include retinal tears, retinal detachment, endophthalmitis and intraocular inflammation.

Some cases of Macular hole development after intravitreal bevacizumab have been reported^(2,3,4) but there have been only two reported cases of macular hole after intravitreal anti-VEGF for treatment of diabetic macular edema.^(4,5) I report a case of macular hole development following administration of bevacizumab.

Case Report

A 48 year old male presented with diminution of vision in both eyes. He was a diabetic for 9 years with poor glycemic control and controlled hypertensive for 5 years. On examination his best corrected visual acuity was 6/60 in right eye and 6/36p left eye. Intra ocular pressure was 14 in right eye and 16 in left eye. On examination the anterior segment was within normal limits. On fundus evaluation, he had Moderate NPDR with CSME (central foveal thickness 541 μ and 502 μ respectively) and grade 3 hypertensive retinopathy in both eyes (Fig 1).

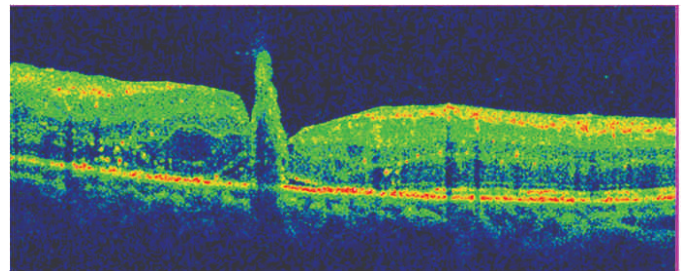
Fig1 (pre-injection)



He was given intravitreal bevacizumab in both eyes in a

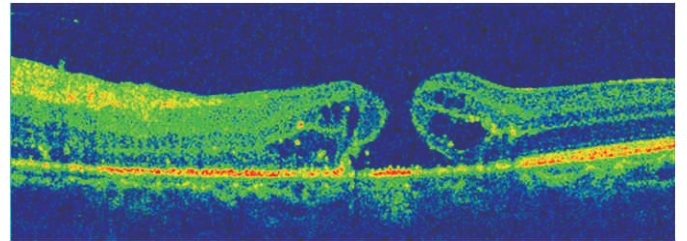
gap of 5 days after taking consent for its off-label use in eye. OCT was repeated after 3 weeks of the injection. In right eye macular oedema reduced on comparison to pre-injection OCT. In left eye OCT image showed some matter escaping or vitreous traction at fovea (Fig 2).

Fig 2 (3 weeks post bevacizumab LE)



After 2 weeks OCT revealed full thickness macular hole with reduction in cystoid oedema (Fig 3).

Fig 3 (5 weeks post bevacizumab LE)



The patient underwent PPV with brilliant blue assisted ILM peeling and the macular hole closed. Final visual acuity was 6/36.

Discussion

I have described a case of macular hole formation following bevacizumab injection for diabetic macular edema. Such case reports are very few and this is only third for DME.

To date, the exact mechanism of macular hole formation following intravitreal injections remains unclear.

The responsible factors have been assumed to exist at the RPE level, retinal surface, and in the vitreous. Induction of vitreous incarceration following anti-VEGF injections could enhance

vitreoretinal traction and subsequently MH development⁽⁶⁾. Chemical compounds introduced into the vitreous cavity and structural modification of the vitreous body following anti-VEGF therapy could also trigger incomplete posterior vitreous detachment (PVD), vitreomacular traction, and subsequent MH formation.⁽⁷⁾ Intravitreal injections can increase vitreomacular traction due to globe deformation during needle insertion and vitreous incarceration at the insertion site following treatment.⁽⁸⁾ This was proposed to cause vitreous syneresis and increase vitreofoveal traction leading to incomplete PVD, resulting in focal sites of traction on the retinal surface and MH formation. In this case, liquefaction necrosis of the Müller cells and adjacent neural cells due to persistent ischemia leads to cystoid macular edema, a known cause of MH formation.⁽⁹⁾ I postulated that intravitreal bevacizumab injection might have had an indirect role in the development of MH formation by favoring the rupture of distended Müller cells and intraretinal cysts. In this case, the coalescence and breakdown of large intraretinal cysts after bevacizumab injection in the presence of serous macular detachment could have caused MH. At 3 weeks something is seen escaping from the fovea leading to macular hole formation, evident on OCT done 2 weeks ahead of this finding.

Conclusion

Macular hole formation following intravitreal bevacizumab injection is a rare complication which needs to be borne in mind while treating diseases like DM, CNVM, etc. Its pathophysiology needs more research work.

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Excellent Closure Rates after Macular Hole Surgery, Even without face-down positioning

This prospective multicenter trial evaluated closure rates after full-thickness macular hole surgery followed by a short-term nonsupine positioning regimen. Surgeons performed pars plana vitrectomy with ILM peeling and SF6 tamponade on 203 macular holes; 202 (99.5%) closed after a single operation. The median time of supine positioning during the first 24 hours was 28 seconds, as recorded by a device attached to each patient's forehead. Based on the excellent closure rates, the authors suggest rigorous face-down positioning may be unnecessary after macular hole surgery. *Ophthalmology Retina*, May 2019 |