

Case report of a secondary macular hole closure after intravitreal bevacizumab therapy in a patient with retinal pigment epithelial detachment

Marcus Werner Storch, Hans Hoerauf

We describe a case of macular hole (MH) closure after intravitreal bevacizumab therapy for an underlying pigment epithelial detachment (PED) due to exudative age-related macular degeneration (AMD). The 73-year-old Caucasian female presented with reduced visual acuity (20/80) of the left eye and metamorphopsia for approximately 6 months. Spectral domain optical coherence tomography revealed a subfoveal PED due to AMD with an associated MH. To treat the exudative component of the pathology, we started intravitreal bevacizumab therapy,

consecutively leading to reduction of the height of PED and allowing closure of the MH. Detachment recurred during further follow-up, but the MH remained closed. MHs and exudative AMD are common diseases, which rarely occur simultaneously. To the best of our knowledge (search via PubMed for "MH," "PED," "age-related macular degeneration"), no other case with the persistent closure of an MH associated with PED during intravitreal anti-vascular endothelial growth factor therapy and despite recurrent PED has been published to date.

Key words: Age-related macular degeneration, bevacizumab, intravitreal anti-vascular endothelial growth factor therapy, macular hole, pigment epithelial detachment

We present the case of a 73-year-old Caucasian female with macular hole (MH) closure after intravitreal bevacizumab therapy for an underlying pigment epithelial detachment (PED) due to exudative age-related macular degeneration (AMD). This case represents the first in literature, though there are several case reports on PED or anti-vascular endothelial growth factor (VEGF) therapy-associated MHs.^[1,2]

Case Report

The 73-year-old Caucasian female presented with decreased vision and metamorphopsia for 6 months in her left eye. Initial examination revealed best-corrected visual acuity (BCVA)

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Quick Response Code:	Website: www.ijo.in
	DOI: 10.4103/ijo.IJO_818_16

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Manuscript received: 31.10.16; Revision accepted: 19.06.17

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Cite this article as: Storch MW, Hoerauf H. Case report of a secondary macular hole closure after intravitreal bevacizumab therapy in a patient with retinal pigment epithelial detachment. Indian J Ophthalmol 2017;65:632-3.

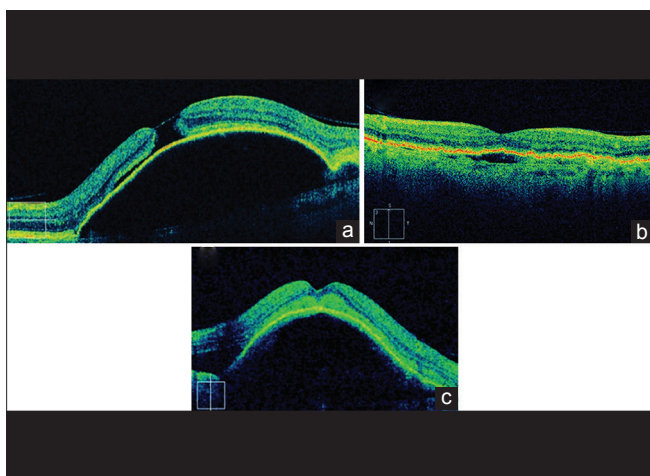


Figure 1: Spectral-domain optical coherence tomography of the left eye at the initial presentation (a) confirmed a full-thickness macular hole and a partially detached posterior hyaloid on top of a prominent pigment epithelium detachment. Four weeks after, the first bevacizumab injection. (b) Pigment epithelial detachment had resolved, and macular hole was closed. Pigment epithelial detachment recurred, but the macular hole did not reopen during further follow-up (c)

of 20/80 LE and 20/25 RE. Fundus biomicroscopy showed exudative AMD with subfoveal PED and an associated MH. Spectral domain optical coherence tomography (SD-OCT) confirmed a full-thickness MH with attached edges and a partially detached posterior hyaloid on top of the prominent PED [Fig. 1a]. Intravitreal anti-VEGF-therapy with three loading doses of monthly bevacizumab (1.25 mg)-injections was started. Already 4 weeks after, the first injection PED had resolved with an approximation of the MH edges [Fig. 1b], but BCVA decreased to 20/160. Four weeks after, the second injection SD-OCT findings showed complete closure of the MH and marked visual improvement to 20/50. During further follow-up, PED recurred, but no reopening of the MH was observed [Fig. 1c]. Continued intravitreal drug therapy with bevacizumab according to Pro Re Nata regimen led to resolution of PED and visual stabilization.

Discussion

MH in the presence of drusen are not rare, and the results of vitreous surgery have been published earlier.^[3,4] In contrast to commonly accepted causative factors such as anteroposterior and tangential vitreous traction forces as in idiopathic MH,^[5] intraretinal glial pathology seems to be the prominent cause in secondary holes, such as ruptured cysts in vascular macular edema^[6] or glial apoptosis on top of confluent soft drusen. The successful surgical treatment of MHs associated with PED was reported by Rajji *et al.*^[7] and Cazabon,^[8] but no report exists on closure of a PED-associated MH by intravitreal anti-VEGF treatment. However, the formation of MH during intravitreal VEGF treatment in patients with PED^[1] and rip^[2] is already

described. The authors proposed vitreous changes, induced by intravitreal injections as a possible pathomechanism.^[9]

Conclusion

In the presented case, it is not known whether the MH was already existing before AMD changes occurred. If it had developed after PED, stretching forces may have played a crucial role in the formation of the MH. A rate of 8.6% spontaneous closure in idiopathic MHs is reported by Chew *et al.*^[10] It usually occurs after spontaneous posterior vitreous detachment. In the presented patient, in OCT images the posterior hyaloid remained attached, however, tangential vitreous traction forces may have released during intravitreal drug treatment. Therefore, in this case, the resolution of PED during anti-VEGF-therapy seemed to release the mechanical stress allowing approximation of the MH-edges and closure of the hole.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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