Torpedo Maculopathy

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Abstract

A 65-year-old male patient presented for a routine ocular evaluation. His best corrected vision in both eyes was 6/6. The anterior segment examination was within normal limits. Fundus examination of the right eye revealed a flat bullet shaped hypopigmented lesion temporal to the fovea. Multimodal imaging, including colour fundus photography, spectral domain optical coherence tomography (SD-OCT), fundus autofluorescence (FAF) and retromode imaging, was performed which confirmed the diagnosis of Torpedo maculopathy. The patient was reassured and advised observation and follow up once in six months. This case highlights the importance of multimodal imaging in identifying this benign condition.

Keywords: Torpedo Maculopathy, Multimodal Imaging

CASE REPORT

A 65-year-old male presented for a routine ocular evaluation, having been advised elsewhere to undergo an intravitreal anti-VEGF injection in the right eye. Anterior segment examination of both eyes was unremarkable, with normal intraocular pressures. Fundus examination of the right eye revealed a flat, bullet-shaped hypopigmented lesion pointing toward the fovea, accompanied by a wedge-shaped hyperpigmented tail.[Figure 1] Fundus autofluorescence (FAF) imaging of the right eye showed a hypoautofluorescent lesion with denser hypoautofluorescence at the tail end. Retromode imaging on the Mirante scanning laser ophthalmoscopy (SLO) platform (Nidek Co. Ltd.) revealed hyporeflectivity at the posterior pole with small, oval-shaped areas of visible choroidal vasculature within the lesion. Spectral domain optical coherence tomography (SD-OCT) of the macula showed loss of the ellipsoid and interdigitation zones, thinning of the outer nuclear layer, and outer retinal cavitation stopping short of the fovea [Figure 1]. Multimodal imaging findings of the left eye was within normal limits [Figure 1]. Based on these multimodal imaging findings, the patient was diagnosed with torpedo maculopathy (TM) in the right eye. He was reassured, advised observation, and scheduled for routine follow-up.

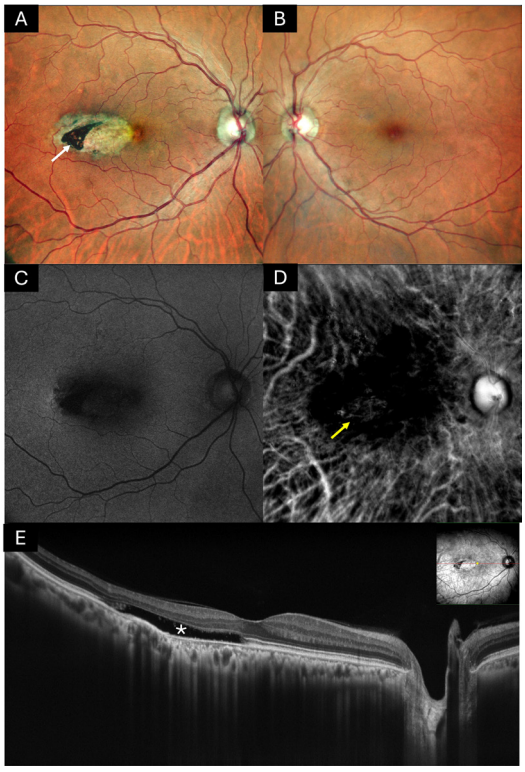

Figure 1: [A] Colour fundus photograph of the right eye (RE) revealing a flat, bullet-shaped hypopigmented lesion

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pointing toward the fovea, accompanied by a wedge-shaped hyperpigmented tail {white arrow}; [B] Colour fundus photograph of the left eye revealing normal features [C] FAF of the RE revealing a hypoautofluorescent lesion with denser hypoautofluorescence at the tail end; [D] Retromode imaging of the right eye revealing hyporeflectivity at the posterior pole with small, oval-shaped areas of visible choroidal vasculature within the lesion {yellow arrow}; [E] OCT line scan through the lesion and fovea revealing loss of the outer retina including the outer nuclear layer, interdigitation zone and photoreceptors {asterix}.

DISCUSSION

Torpedo maculopathy (TM) is a rare, benign, and well-defined hypopigmented lesion of the retinal pigment epithelium (RPE), believed to be congenital.[1] Fundus examination typically reveals a solitary, hypopigmented, oval-shaped lesion resembling a bullet or torpedo with a wedge-shaped tail extending peripherally and pointing toward the fovea along the horizontal raphe. While rare, cases have been reported outside the horizontal raphe, oriented along the nerve fiber layer with the nasal apex pointing toward the optic disc.[2] TM is most often an incidental, unilateral finding. Although the pathogenesis of TM remains unknown, several hypotheses have been proposed, including a developmental defect in the nerve fiber layer along the horizontal raphe, abnormal development of choroidal or ciliary vasculature or a persistent developmental defect in the RPE within the fetal temporal bulge.[3]

Wong et al. described two distinct patterns of torpedo maculopathy lesions on OCT. Type 1 lesions are characterized by attenuation of the outer retinal structures without evidence of outer retinal cavitation, while Type 2 lesions demonstrate loss of the ellipsoid and interdigitation zones, thinning of the outer nuclear layer, and outer retinal cavitation.[4] A third pattern, Type 3, has also been proposed, defined by excavated inner retinal layers, retinal thinning, hyper-reflective spaces within the inner retina, and an absence of subretinal cleft.[5] Light and Liu introduced a Type 4 morphology, describing a case where the foveal region exhibited disruption of the ellipsoid zone without outer retinal cavitation, while the temporal tail demonstrated preservation of the ellipsoid zone accompanied by inner choroidal excavation.[6] On FAF, torpedo maculopathy typically presents as a hypofluorescent area corresponding to the atrophic retinal pigment epithelium (RPE), surrounded by a hyperfluorescent border indicative of increased lipofuscin accumulation.[7] Retromode imaging, a recently described modality, generates a pseudo three-dimensional view of the lesion. In this case, retromode imaging revealed an area of visible choroidal vasculature corresponding to the lesion, reflecting the loss of the outer retinal layers.[8]

Most cases of TM are asymptomatic and non-progressive, requiring only observation and routine follow-up. However, rare instances of associated choroidal neovascularization (CNV) have been reported, necessitating careful monitoring, especially in younger individuals.[9]

CONCLUSION

To conclude this report highlights a case of TM in a 65-year-old male, emphasizing the characteristic multimodal imaging features of this condition. While TM is a benign and typically asymptomatic finding, awareness among physicians and patients is essential. Long-term follow-up is particularly important in younger populations due to the potential, albeit rare, risk of developing CNV.

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CONFLICTS OF INTEREST

There are no conflicts of interest.

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