Symmetric Flecks in the Posterior Poles of a 46-Year-Old Male

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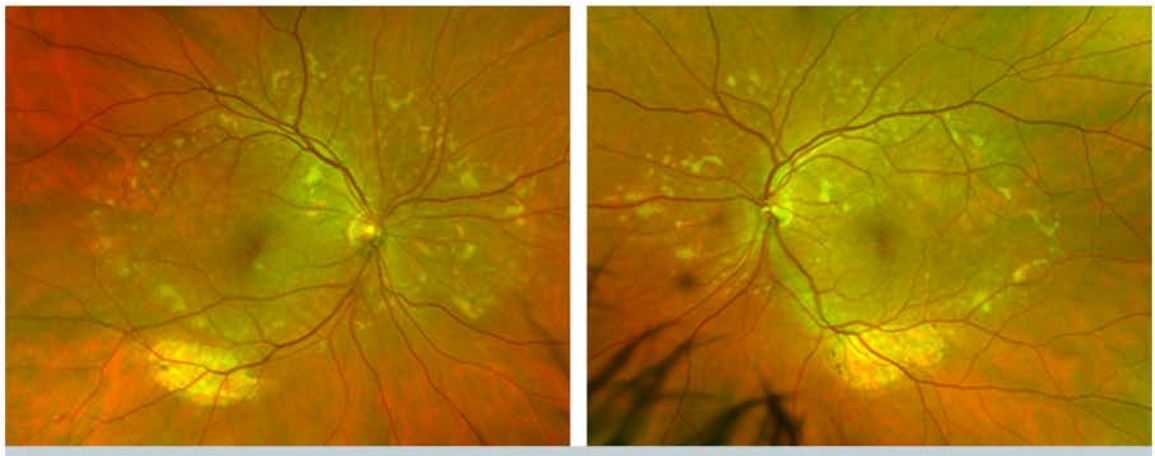
Introduction:

A 46-year-old male was referred for a second opinion. He complained of mild blurry vision and floaters for the past year. He reported no relevant past medical history and denied a family history of significant ocular disease.



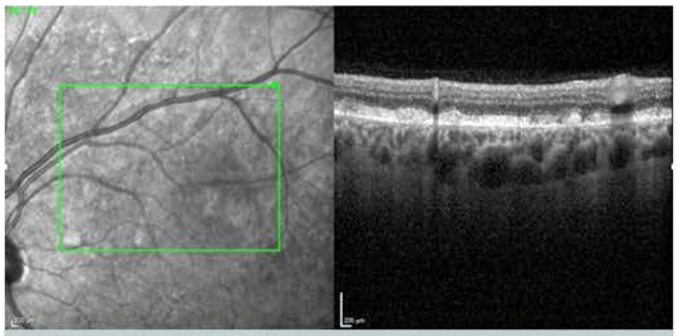
Optos images demonstrate a remarkably symmetric pattern of yellow-white flecks across the posterior poles.

Exam:

Visual acuity was 20/25 in both eyes. Anterior segment exam revealed bilateral nuclear sclerosis. Intraocular pressures were normal.

Dilated fundus exam was notable for a constellation of findings with remarkable symmetry between the eyes. Multiple yellow-white flecks were clustered within an elliptical zone centered on the posterior pole of each eye (Figure 1). A focal zone of chorioretinal atrophy was present along the inferotemporal arcade of each eye. In the superotemporal macula of each eye a small area of retinal thickening was observed.

On optical coherence tomography the flecks correlated to hyperreflective subretinal material (Figure 2). The superotemporal retinal thickening seen on clinical exam correlated to a shallow subretinal fluid without any associated choroidal neovascular membranes (Figure 3). Fundus autofluorescence revealed foci of hyper- and hypoautofluorescence, with the larger yellow-white flecks at the periphery of the elliptical zone correlating to foci of hyperautofluorescence (Figure 4). Fluorescein angiography demonstrated early and late staining of the yellow-white fleck lesions, a window defect in the area of the inferotemporal atrophy, and leakage in the area of the superotemporal macular subretinal fluid (Figure 5).



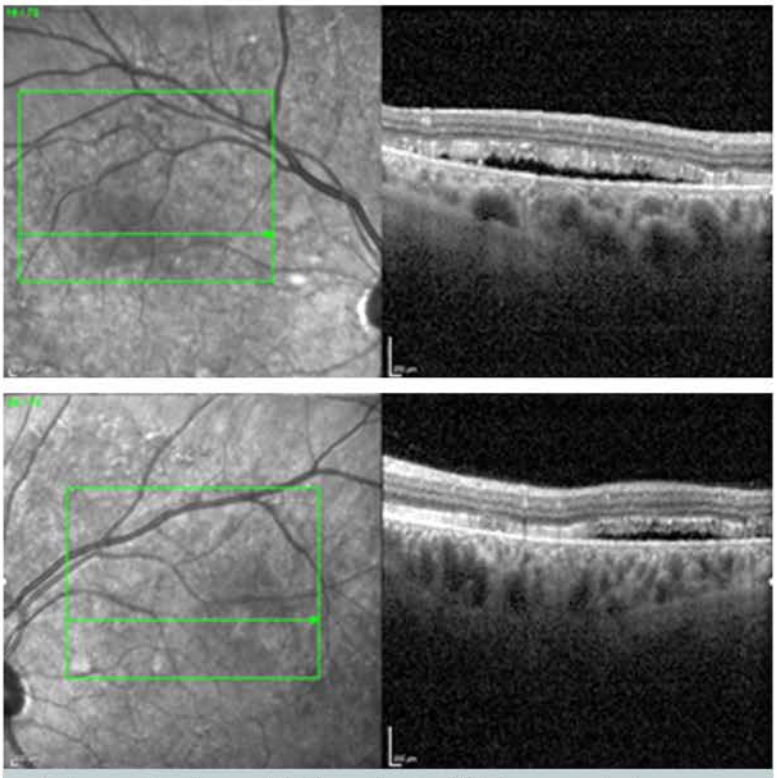
OCT through a cluster of flecks straddling the vascular arcade of the left eye demonstrates hyperreflective subretinal material at the locations of the flecks.

Diagnosis:

Prior to presentation the patient was treated for a presumed white dot syndrome, specifically acute posterior multifocal placoid pigment epitheliopathy (APMPPE). He underwent several courses of topical and oral steroids. A prior workup for infectious or inflammatory etiologies was unrevealing. Given

this negative workup and poor response to steroids the patient was referred for a second opinion.

Given the striking symmetry between the patient's eyes and the localization of the pathology to the outer retina and retinal pigment epithelium there was strong suspicion of a pattern dystrophy. Diagnoses of multifocal Best disease and autosomal recessive bestrophinopathy were also considered, but the patient's particular presentation was deemed most consistent with multifocal pattern dystrophy simulating fundus flavimaculatus.



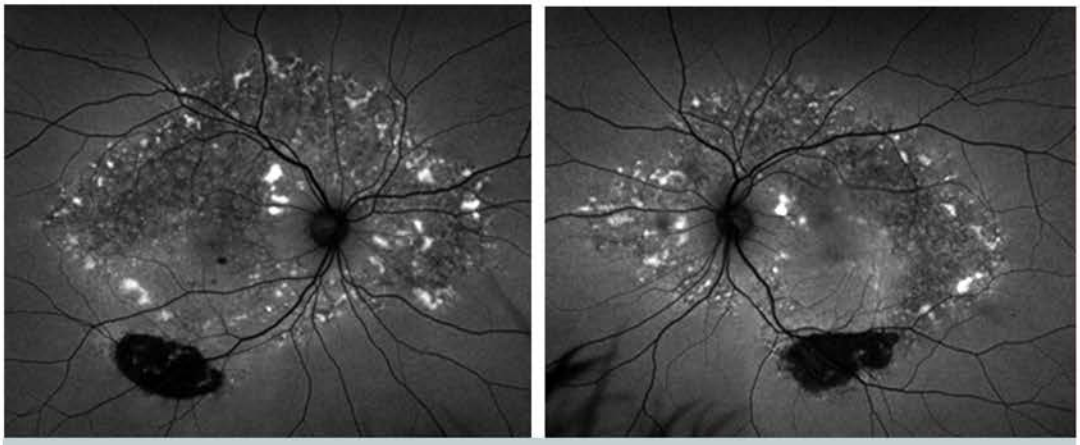
A circumscribed area of shallow subretinal fluid was seen in the superotemporal zone of each macula.

Discussion:

Multifocal pattern dystrophy simulating fundus flavimaculatus (MPD) is one the five main pattern dystrophies classified by Gass in 1997.[1] Basing his classification on patterns of pigment distribution, Gass distinguished MPD from adult-onset foveomacular vitelliform dystrophy (AFVD), butterfly-shaped pigment dystrophy, reticular dystrophy, and fundus pulverulentus.[1] The autosomal dominant dystrophies generally manifest in middle age with mild to moderate disturbance of central vision.[2] Most follow a benign course, but with advancing age atrophy of the RPE/photoreceptor complex and choroidal neovascularization can cause severe vision loss.[3]

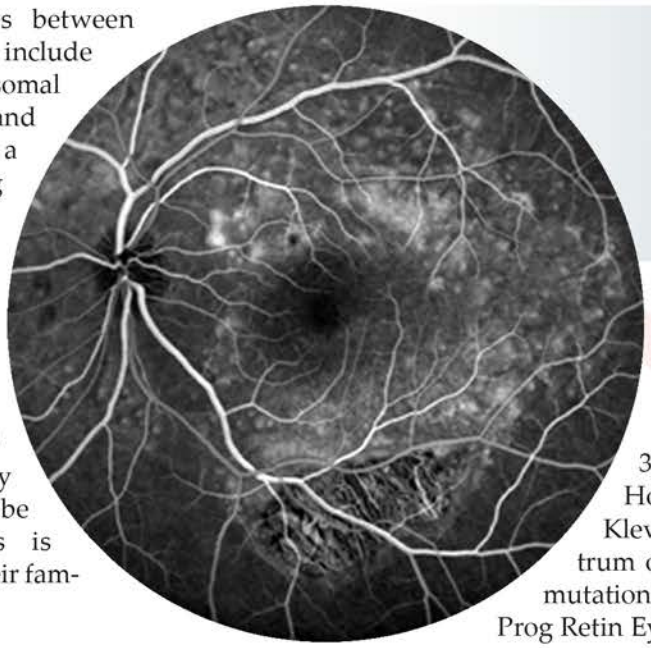
Mutations in the peripherin/RDS gene have been implicated in several of these pattern dystrophies, specifically MPD, AFVD, and butterfly dystrophy.[3] The peripherin/RDS gene encodes a cell membrane glycoprotein called peripherin 2, which localizes to cone and rod outer segments where it plays a crucial role in morphogenesis.[3] Over 100 genetic peripherin/RDS mutations have been identified, most resulting in an autosomal dominant phenotype.[4] In addition to pattern dystrophies, peripherin/RDS mutations also lead to variants of central areolar choroidal dystrophy, cone-rod dystrophy, and retinitis pigmentosa.[3,4]

Our patient demonstrates the characteristic features of MPD. The yellow-white flecks reminiscent of Stargardt disease are the most salient feature and their distribution, extending beyond the vascular arcades, is a hallmark of MPD.[1,3] Our patient's symmetric, well-demarcated areas of chorioretinal atrophy are known to occur in MPD. In reported cases of late-stage disease this atrophy has advanced throughout the posterior pole.[2] The shallow subretinal fluid in our patient is not a commonly reported feature of MPD. It did not appear to be the result of choroidal neovascularization, which can occur in MPD.[5] We posit that either an overlying element of central serous chorioretinopathy may be at work given the patient's extensive use of oral steroids, or a variant MPD phenotype is represented.

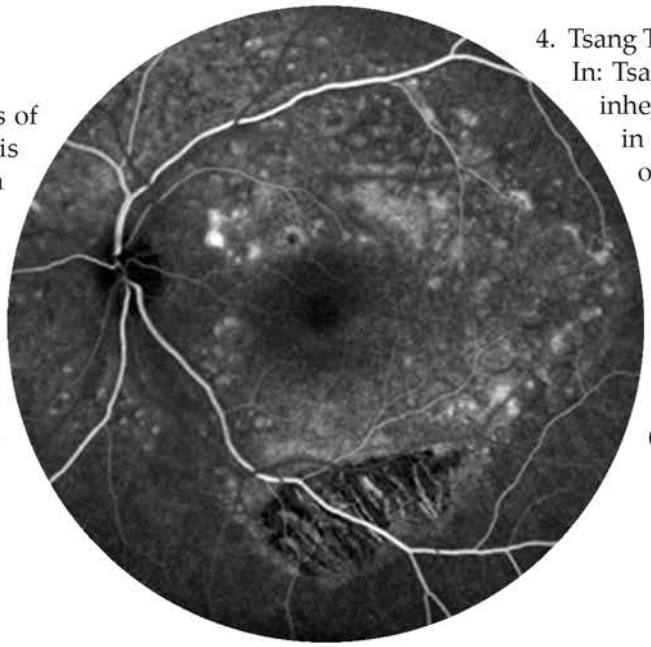


Fundus autofluorescence reveals hyperautoflourescence of the flecks, particularly those at the margins of the area affected.

Key distinguishing features between MPD are Stargardt disease include MPD's late age of onset, autosomal dominant inheritance, good and stable vision, and absence of a dark choroid. Distinguishing MPD from other pattern dystrophies can be difficult. The pigmentation patterns of butterfly dystrophy and AFVD may precede or accompany the typical MPD fundus appearance, complicating the clinical picture.[3] Though MPD is a rarely encountered entity—to be sure—its timely diagnosis is important for patients and their families.



Fluorescein angiography of the left eye in the arteriorvenous (top) and late (bottom) phases demonstrates early and late staining of the flecks. A window defect is seen inferotemporally in the area of chorioretinal atrophy.



References:

1. Gass JD. Stereoscopic atlas of macular diseases: diagnosis and treatment, Volume 1. 4th edition. St Louis: Mosby. 1997:314-325.

2. Boon CJF, Van Schooneveld MJ, Den Hollander AI, et al. Mutations in the peripherin/RDS gene are an important cause of multifocal pattern dystrophy simulating fundus flavimaculatus. Br J Ophthalmol. 2007;91:1504-1511.

3. Boon CJF, Den Hollander AI, Hoyng CB, Cremers FPM, Klevering BJ, Keunen JEE. The spectrum of retinal dystrophies caused by mutations in the peripherin/RDS gene. Prog Retin Eye Res. 2008;27:213-235.

4. Tsang TH, Sharma T. Pattern dystrophy. In: Tsang TH, Sharma T. (eds) Atlas of inherited retinal diseases. Advances in experimental medicine and biology. Springer: 2018;91-96.

5. Kim RY, Dollfus H, Keen TJ, et al. Autosomal dominant pattern dystrophy of the retina associated with a 4-base pair insertion at codon 140 in the peripherin/RDS gene. Arch Ophthalmol. 113:451-455.

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