CASE REPORT

Acute Posterior Multifocal Placoid Pigment Epitheliopathy – Case Report

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SUMMARY

Acute posterior multifocal placoid pigment epitheliopathy (APMPPE) affects individuals between 20 to 30 years of age and ocular manifestations are often preceded by flu-like illness. Symptoms of the disease include acute vision decrease associated with central and paracentral scotoma. Impairment of vision is usually bilateral, but may be asymmetric. We report the case of a man at the age of twenty-one, who was treated for APMPPE. Due to the involvement of the macula, low visual acuity and related immunogenetic predisposition (HLA-B27 positivity) was recommended corticosteroid therapy with a good therapeutic effect.

Key words: acute posterior multifocal placoid pigment epitheliopathy (APMPPE), white dot syndromes, macular edema

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INTRODUCTION

Acute posterior multifocal placoid pigment epitheliopathy (APMPPE) is a rare disease which mainly afflicts younger individuals (aged between 20 and 30 years), regardless of sex. It was first described by Gass in 1968 [6]. In 30-50% of cases, the ocular manifestations are preceded by influenza [5, 7, 8].

Symptoms of APMPPE include acute deterioration of vision, in connection with central and paracentral scotomas. Deterioration of vision is usually bilateral, but it may be asymmetrical. The second eye is generally afflicted subsequently within few days to weeks.

In the majority of cases, visual acuity returns to its original values within 3-6 weeks, but improvement may also take longer, up to 6 months [7]. Recurrences are rare, and usually appear within the course of 6 months from the first occurrence. With regard to the existing connection between this disease and HLA-B7 and HLA-DR2 positivity, it is possible to assume that a genetic predisposition exists. Acute posterior multifocal placoid pigment epitheliopathy may be linked to general infections (for example pulmonary tuberculosis, group of streptococcal infections and borreliosis), as well as with non-infectious illnesses, including Wegener's granulomatosis, erythema nodosum, polyarteritis nodosa, thyroiditis, ulcerous colitis, vasculitis of the brain vessels, scleritis and episcleritis [12].

CASE REPORT

A man aged 21 years was admitted at the Department of Ophthalmology of the University Hospital in Hradec Králové due to deterioration of vision in the right eye. The anamnesis implies that 4 weeks previously he had suffered from influenza. He has not undergone any treatment generally and has not used any pharmaceuticals regularly. His previous ocular anamnesis is without remarkable features.

He experienced ocular complaints for three days, perceiving a progressively increasing black spot in the centre of the visual field of the right eye. Initial visual acuity of the right eye was 1.5/50, correction did not improve the situation. Visual acuity in the left eye was 6/6 naturally. We observed isolated precipitates on the endothelium of the cornea in the right eye, in the anterior chamber tyndallisation 1+ and in the vitreous body numerous powder-like turbidities. The optic disc was well defined, of a pink colour, on the retina along the vascular arcades there was a number of yellowish-white foci, some with pigment clusters, in the central region there was a pronounced oedema (Fig. 1). In the left eye, the finding in the anterior segment corresponded to the patient's age; yellowish-white foci dominated on the fundus along the vascular arcades, in the central region there were three whitish foci in the upper part of the macula (Fig. 2). Optical coherence tomography (OCT) (Zeiss Cirrus) of the central region of the right eye demonstrated serious ablation of the neuroretina, a finding of free fluid between the neuroretina and the retinal pigment epithelium (RPE), a hyperreflective inflammatory deposit in the layer of the inner and outer photoreceptors (IS/OS) and oedema of the neuroretina (Fig. 3). Central retinal thickness (CRT) was 648 µm. In the left eye we determined 3 hyperreflective foci on OCT in the layer of the IS/OS photoreceptors. Central retinal thickness was 230 µm (Fig. 4).

Immediately at the beginning of the first minute of fluorescence angiography (FAG) we observed hypofluorescence in the area of the foci (Fig. 5), which progressively passed into merging hyperfluorescence. The post-inflammatory foci were of a character of non-graduating hyperfluorescence of the "window" defects of RPE (Fig. 6).

On the basis of the objective finding and the patient's anamnesis, a diagnosis of APMPPE bilaterally was determined, with predominance in the right eye. Basic blood and targeted rheumatological samples were taken, including HLA typing. We determined higher CRP values 73.5 mg/l and HLA B-27 positivity, other values were within the standard. With regard to the

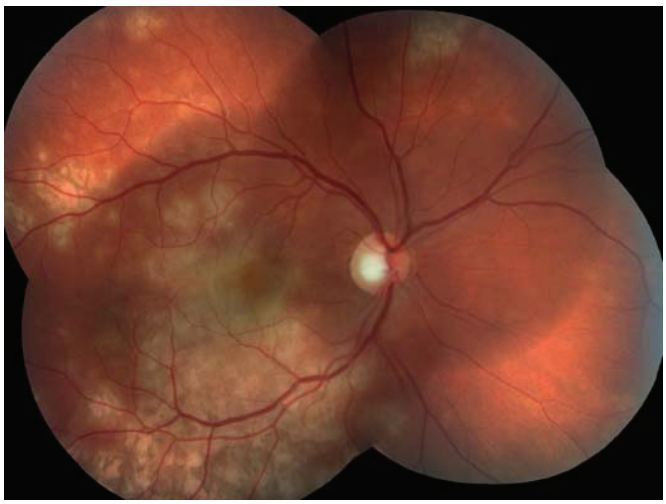

Fig. 1 Right eye. A number of yellowish-white foci along the vascular arcades, oedema in the central region of the retina.

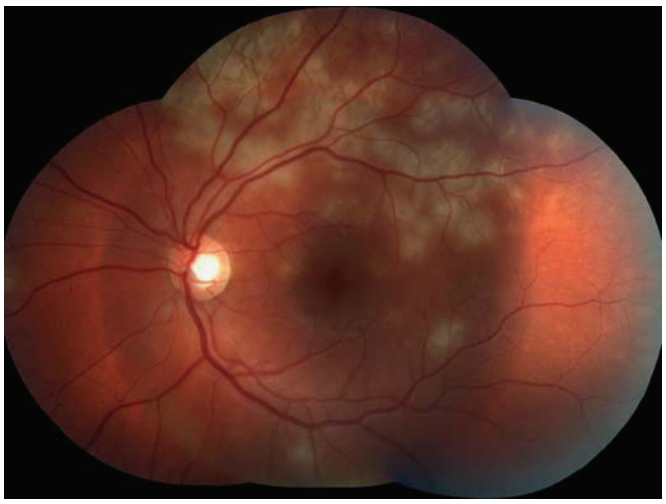

Fig. 2 Left eye. A number of yellowish-white foci along the vascular arcades, three whitish foci in the upper part of the central region of the retina.

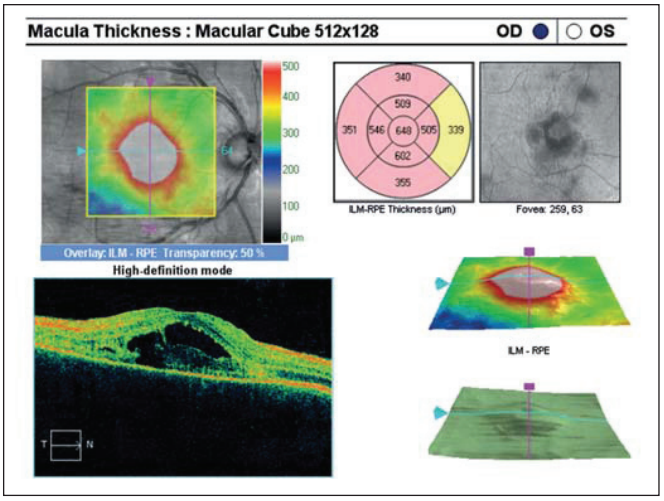

Fig. 3 OCT of central region of right eye. Serious ablation of neuroretina, hyperreflective inflammatory deposit on level of layer of IS/OS photoreceptors, oedema of neuroretina.

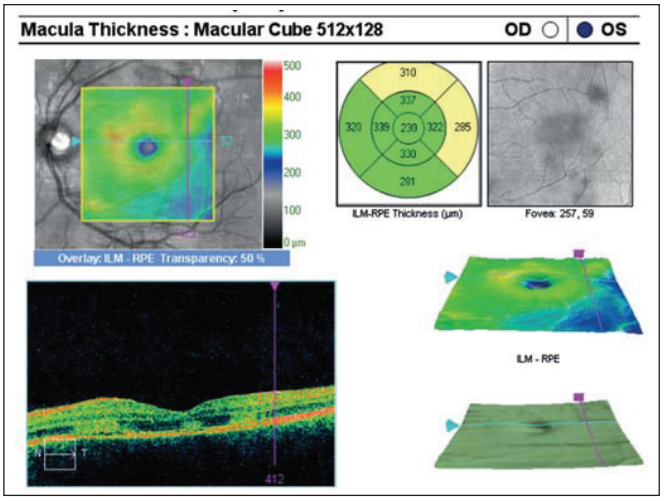

Fig. 4 OCT of central region of left eye. Three hyperreflective foci in layer of IS/OS photoreceptors.

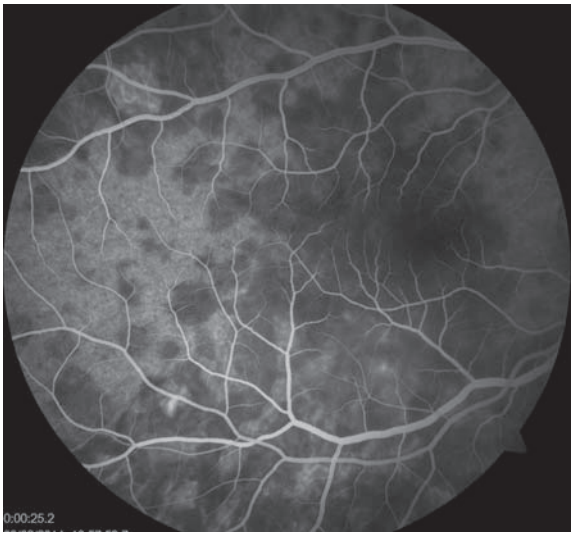

Fig. 5 FAG of right eye. Hyperfluorescence of foci during initial phase of FAG

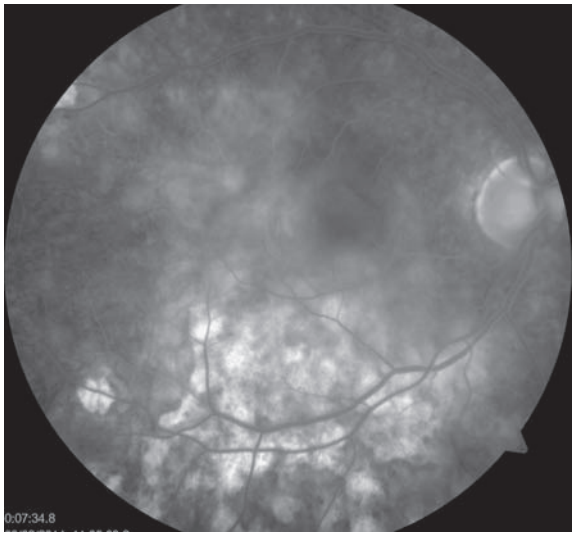

Fig. 6 FAG of right eye. Merging hyperfluorescence of active foci, hyperfluorescence of window defects of RPE in area of no longer active post-inflammatory lesions.

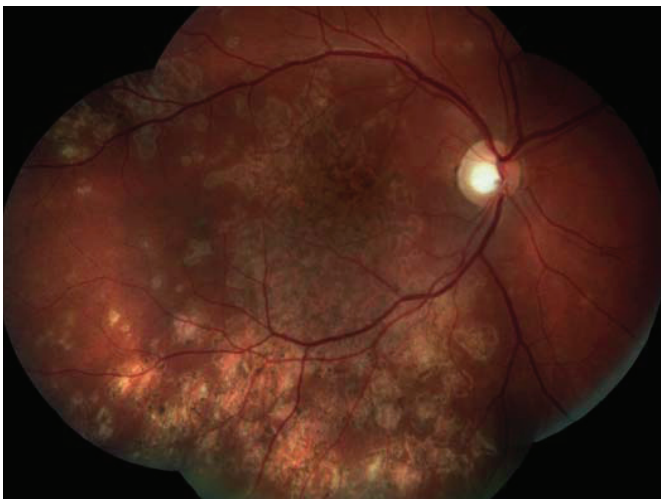

Fig. 7 Right eye. Original active foci on retina become defined progressively and are partially pigmented. Macular oedema has been absorbed.

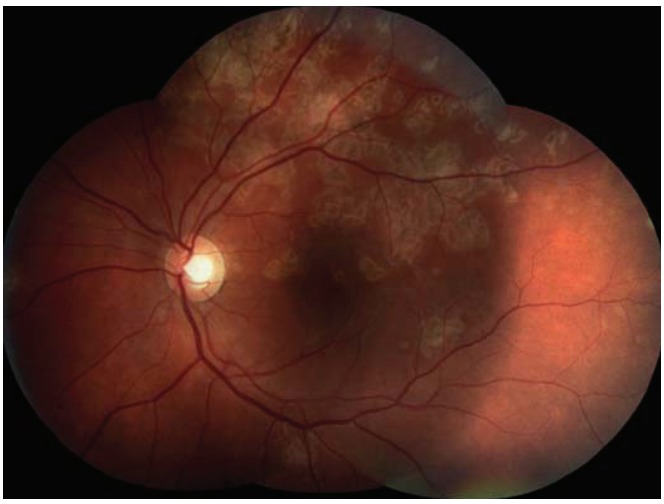

Fig. 8 Left eye. Original active foci on retina become defined progressively and are partially pigmented.

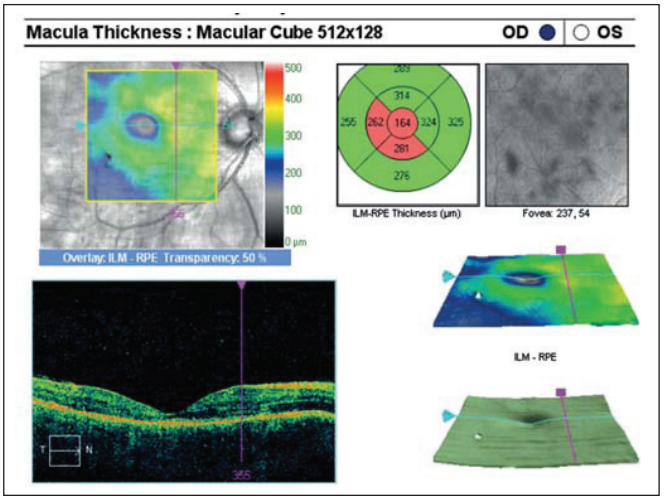

Fig. 9 OCT of central region of right eye. Oedema of neuroretina in central region has disappeared, foveolar depression created, incipient atrophy.

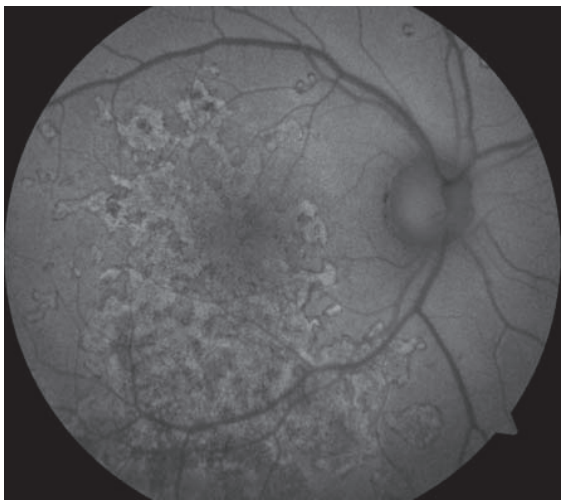

Fig. 10 Auto-fluorescence photography of fundus of right eye. Foci of atrophy of RPE, dispersion of pigment in afflicted areas.

affliction of the central region, low visual acuity and the associated immunogenetic predisposition (HLA-B 27 positivity), corticosteroid therapy was recommended – a total of 3 intravenous pulses of Methylprednisolone 500 mg for a period of three days, oral use of Prednisone 60 mg/day was continued, with progressive tapering of the dose for a period of 7 days. With the applied therapy a subjective and objective improvement was attained in both eyes. Visual acuity in the right eye improved to 6/24, in the left eye it remained preserved at 6/6. The originally active foci on the fundus progressively became defined and partially pigmented bilaterally after 6 days from the commencement of therapy (Fig. 7, 8). Optical coherence tomography of the central region of the right eye (Fig. 9) demonstrates an improvement of

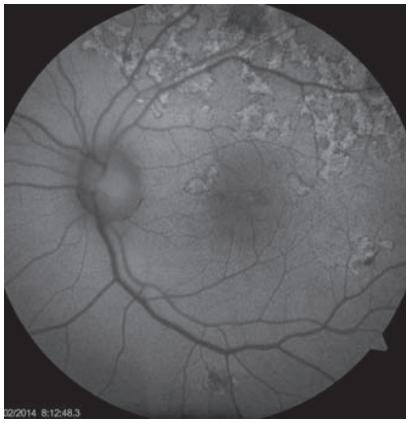

Fig. 11 Auto-fluorescence photography of fundus of left eye. Foci of atrophy of RPE, dispersion of pigment in afflicted areas.

the condition, oedema of the neuroretina in the central region disappeared, a foveolar depression formed, CRT 164 µm. In the auto-fluorescence image of the retina, foci of RPE atrophy and coarse pigment changes in the afflicted area are perceptible bilaterally (Fig. 10, 11). Further observation of the development of the disorder was not possible, because the patient did not come to the planned follow-up examination.

DISCUSSION

A typical finding of APMPPE on the fundus is numerous, yellowish foci with a size of approximately 1500-3000 µm, which stretch from the posterior pole to the equator of the eye and are localised at the level of the RPE. During the course of one to two weeks, the acute foci become progre-

Table 1. * Differential diagnostics of more frequently occurring white dot syndromes.

	APMPPE	Birdshot chorioretinopathy	Diffuse unilateral subacute neuroretinitis
Age	Young adults (20-50)	Middle age (40-60)	Variable
Sex	M = F	M<F	M = F
Unilateral/bilateral	Bilateral	Bilateral	Unilateral
Viral illness	+/-	-	-
Beginning of symptoms	Sudden	Inconspicuous	Variable
Length of duration	Recurrence rare	Chronic course, frequent recurrence	Months - years
Weeks – months			
Symptoms	Blurred vision, scotomas, photophobia	Blurred vision, turbidities, nyctalopia, photophobia	Severe loss of sight
Vitritis	mild	medium	mild
Finding	Multifocal, flat, yellow/white lesions on level of RPE, which reduce in size over 7-12 days	Numerous creamy/white indistinctly bordered foci at level of RPE, atrophy of the optic disc	Afferent pupillary defect, oedema of the optic disc, clusters of white-yellow foci at the level of RPE, attenuation of capillaries
FAG	Acute stage: hypofl., which passes into hyperfl. recovery: window defects of RPE	Normal, progressively grading vascular hyperfluorescence, cystoid macular oedema may appear	
Electroretinography (ERG)/ electrooculography (EOG)	Reduction of EOG	Abnormal ERG (rods and cones)	Serious reduction of ERG
Consequences	Pigment dispersion	Cystoid macular oedema, rare neovascularisation	Atrophy of RPE, atrophy of the optic disc
HLA	HLA-B7, HLA-DR2	HLA-A29	-
Therapy	Observation	Corticosteroids	Direct photocoagulation
Prognosis	Good	Variable	Poor
Aetiology	? viral	? autoimmune	Tapeworm: ? Baylisascaris, ? Ancylostoma
	Disappearing white dot syndrome	Multifocal choroiditis and panuveitis	Serpiginous choroidopathy
Age	Young (20-40)	Young, may appear in children	Young and middle age (30-60)
Sex	M<F	M<F	M>F
Unilateral/bilateral	Unilateral	Bilateral	Bilateral, asymmetrical
Viral illness	+/-	+/-	-
Beginning of symptoms	sudden	Inconspicuous	Variable
Length of duration	Weeks-months		
recurrence rare	Chronic course, recurrence frequent	Chronic course, recurrence frequent	
Symptoms	Blurred vision, scotomas, photophobia	Blurred vision, turbidities in front of eye, nyctalopia, photophobia	Blurred vision, scotomas
Vitritis	mild	Medium	Mild
Finding	Myopia, +/- afferent pupillary defect, small white dots on level of RPE, white/orange sketch of central region, +/- oedema of the optic disc, spreading of grey smudge	Myopia, anterior uveitis (50%), acute yellow-grey foci replaced by scar, +/- oedema of optic disc, cystoids, macular oedema	Zones of geographical atrophy of RPE in peripapillary/macular area, spreading of lesion towards centre, atrophy of RPE and choriocapillary atrophy
FAG	Hyperfluorescence at the beginning, “staining” of lesions at the end	Acute stage: blockade of fluorescence of individual foci, passing into hyperfluorescence recovery: “window” defects of RPE	Acute stage: hyperfluorescence of foci in initial phase, colouring thereof at end
Electroretinography (ERG)/ electrooculography (EOG)	Reduction of ERG	Normal ERG	Normal ERG
Consequences	Mild changes of RPE	Cicatrical changes on retina, neovascularisation	Atrophy of RPE, scarring, choriocapillary atrophy
HLA	-	-	HLA-B7
Therapy	Observation	Corticosteroids	Immunosuppressive therapy, ? antivirotics
Prognosis	Very good	Poor	Variable
Aetiology	? viral	? viral	? autoimmune, ? infectious (? Herpes virus)

*D. Quillen, J. Davis, J. Gottlieb et al.: The White Dot Syndromes, Am J Ophthalmol, 2004; 137:538-50

ssively defined and pigment shifts of various degrees occur with atrophy of the RPE. In our case, in addition to typical symptoms of APMPPE we also recorded a less frequent finding of iridocyclitis, as well as the presence of inflammatory cells in the vitreous body. Other less frequent findings are periphlebitis, central retinal vein occlusion, serous retinal detachment, retrohyaloid haemorrhage, episcleritis, inflammation and swelling of the optic disc, extension and tortuosity of retinal capillaries [1, 2, 7, 8, 9, 12].

The etiopathogenesis of the disease remains unclear. Several theories have been described in the literature. Gass presumes that the cause of the disease is a transitional malfunction of the structure and function of the RPE on a basis of potential viral infection (oedema of RPE cells which blocks choroidal fluorescence). The good prognosis of this disease and the rapid improvement of visual improvement support this theory. Other authors state choriocapillary hypoperfusion with secondary changes of the RPE [4] as the primary cause. The cause of this hypoperfusion may be vascular changes of immune origin, which would correlate with HLA-B7 and HLA-DR2 positivity and association with systemic vasculitides in the majority of patients with APMPPE [5]. In our case, in the acute phase of the disease, the presence of a hyperreflective inflammatory focus in the layer of the IS/OS photoreceptors on OCT and a finding of free fluid between the neuroretina and the RPE rather support this theory. Choriocapillary hypo- to nonperfusion leads to ischemia of the choroidea, and subsequently to changes of the RPE, defects of the layer of the junction of the IS/OS photoreceptors and increased vascular permeability. Objectively on FAG we observed a manifestation of these processes on the retina as hypofluorescence in the area of active foci at the beginning of FAG, which progressively passed into merging hyperfluorescence.

Acute posterior multifocal placoid pigment epitheliopathy ranks within a heterogeneous group of diseases known as white dot syndromes, the clinical findings of which we have compared with the finding in our patient (Table 1) within the framework of differential diagnostics [11].

The majority of authors do not recommend the commencement of therapy of APMPPE, but in the case of the presence of negative prognostic factors, which are affliction of the macula, low visual acuity, connected immunogenetic predisposition, age higher than 60 years upon the first attack, unilateral manifestation of the disease and an interval of longer than 6 months before the affliction of the other eye, use of corticosteroids is recommended [3, 10]. In our case, with regard to the affliction of the central region, low visual acuity of the right eye and connected immunogenetic predisposition (HLA-B 27 positivity), general corticosteroid therapy was recommended, with good therapeutic effect.

CONCLUSION

Acute posterior multifocal placoid pigment epitheliopathy is an acquired inflammatory disease, which belongs to the heterogeneous group of white dot syndromes. In our case, on the basis of the clinical picture and anamnesis, we diagnosed a less frequent form of the disease, with affliction of the central region and a pronounced deterioration of visual acuity in the more afflicted eye, with an accompanying inflammatory reaction in the anterior segment of the eye and in the vitreous area. Upon applied intensive immunosuppressive therapy, a regression of the inflammatory reaction occurred to the full scope, with improvement of visual acuity. The incomplete return of visual acuity in the more afflicted eye corresponds to permanent changes of the RPE in the macula.

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