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Spectral Domain Optical Coherence Tomography Findings of Acute Purtscher's Retinopathy

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Abstract: **To report spectral domain optical coherence tomography findings in acute Purtscher's retinopathy. Methods: Case report and image analysis. Results: A 32-year-old man presented with decreased vision and cotton-wool spots in his right eye, which was hyperreflective on spectral domain optical coherence tomography. There were retinal and pre retinal haemorrhages. He was diagnosed with Purtscher's retinopathy, after two months of observation the vision slightly improved but still poor, although the haemorrhages resolved with some remaining retinal opacification of papillomacular bundle. There was marked temporal optic nerve pallor Conclusion: The visual prognosis of Purtscher's retinopathy could be very guarded if the infarction involves the papillomacular bundle.**

Keywords: **Purtscher's retinopathy, Trauma, retinal haemorrhages, optic nerve pallor.**

1. CASE REPORT

A 32 year-old man presented to ER with sudden decrease of vision in his right eye few hours after road traffic accident with head trauma two weeks earlier. He is not known to have any medical illness, his vision was counting finger near to face in his right eye and 20/20 in his left eye, his intraocular pressure was 10 mmHg in both eyes. There was an afferent pupillary defect +1 of the right eye. Anterior segment examination was within normal limits with intact lids and no signs of any ocular injury. Fundus examination of the right eye revealed multiple peripapillary cotton wall spots (CWS), in the macula as well. There were retinal haemorrhages, some are flame shaped and one disc area of sub-ILM haemorrhage [anatomical location proved by spectral domain optical coherence tomography (SD-OCT)] along the inferior temporal arcade.

Fundus examination of the left eye was completely normal. Fluorescein angiography of the right eye showed good filling of the arteries and veins with multiple hypofluoresent areas corresponding with the retinal haemorrhages and CWS were seen on examination.

Spectral domain optical coherence tomography revealed a relatively preserved foveal contour with an area of increased hyper-reflectivity in the inner plexiform, inner nuclear, and outer plexiform layers of the papillomacular bundle . This hyper-reflectivity corresponded to the area of CWS's shown on the colour fundus photograph.

So, the diagnosis was purtscher's retinopathy of the right eye and the decision was observation.

Two months later, he reported some improvement in his vision of the right eye, from counting fingers to 20/200 with pin hole. On fundus examination the retinal and sub-ILM haemorrhages were resolved. The retinal opacification improved with some remnant at papillomacular bundle with sclerosed small macular vessels feeding this area. Temporal optic nerve pallor was evident at that time as a result of the infarcted area in the macula. SD-OCT showed atrophy of the inner retinal layers and resolved sub-ILM haemorrhage.

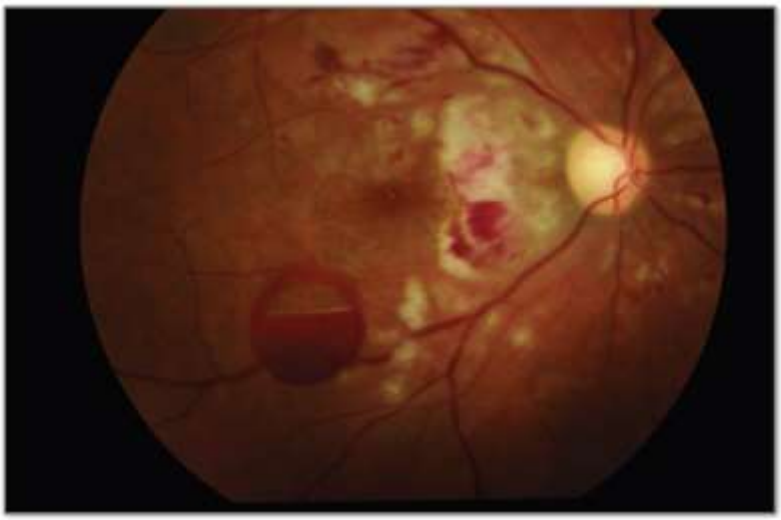
2. DISCUSSION

Purtscher's retinopathy was first described in 1910 by Otmar Purtscher, in a patient with severe head trauma when he noted multiple areas of retinal whitening and haemorrhage in the posterior poles of both eyes [1]. Similar fundus findings, referred to as Purtscher- like (non-traumatic) retinopathy, have been described in patients with systemic condition such as acute pancreatitis , amniotic fluid embolism, collagenvascular disorders and renal failure[2].

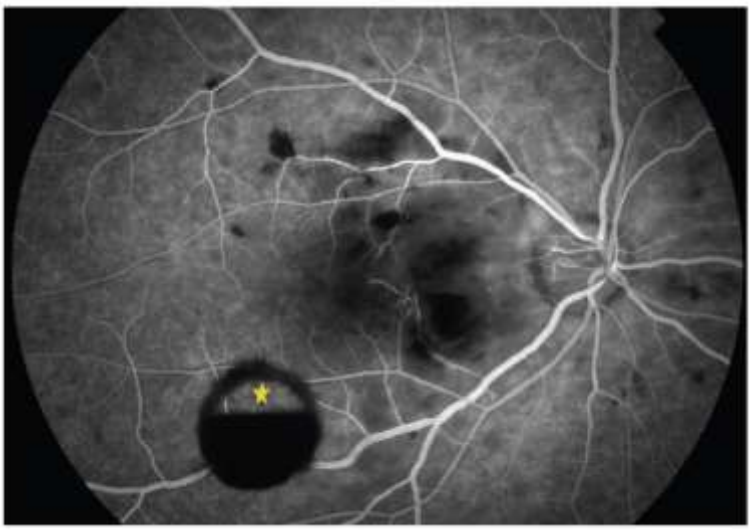
The pathogenesis is thought to be micro embolism of fat, air, fibrin clots or complement-mediated leukocyte aggregation[3].

Our case illustrates the natural history of Purtscher's retinopathy , as in such cases , these findings often resolve spontaneously within 1-3 months and may be replaced by mottling of the RPE, temporal disc pallor or attenuation or sheathing of the retinal vessels[4].

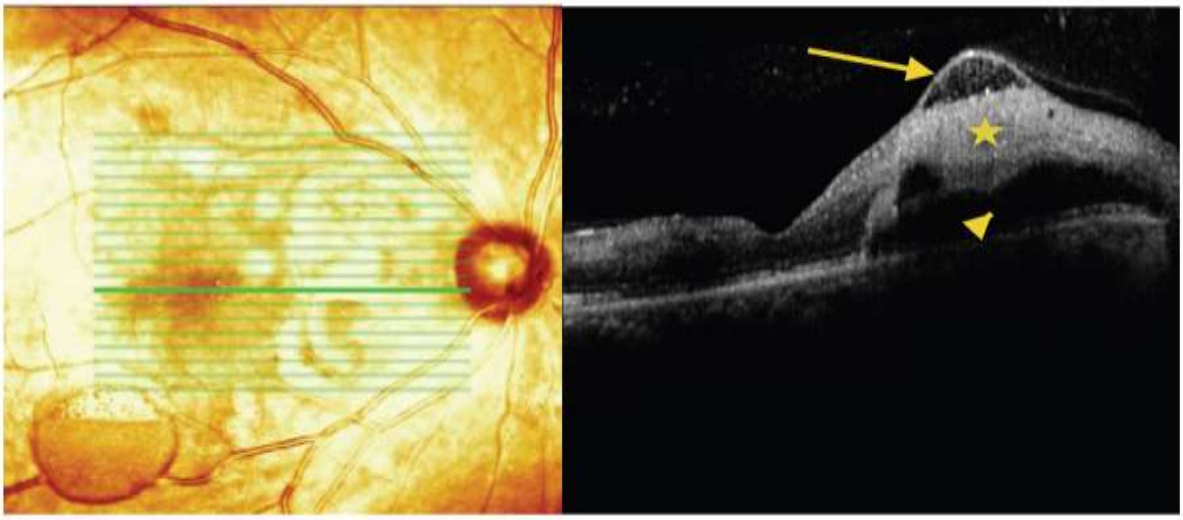
Treatment with systemic high-dose steroids may improve visual outcome in some patients but at present there is little evidence to support such treatment [2],[5].



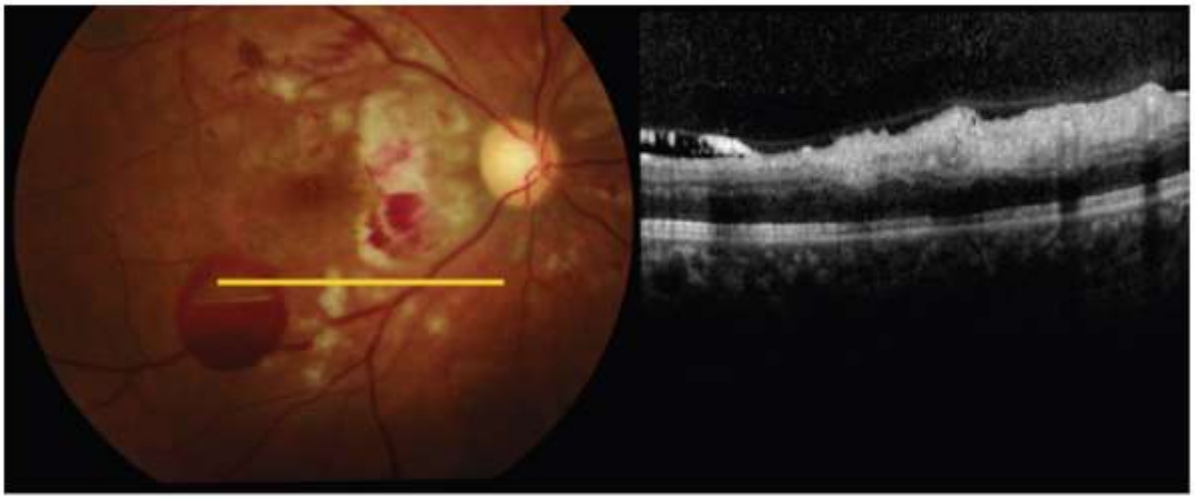
A fundus photograph of the right eye shows patches of retinal whitening (CWS) distributed in the peripapillary fashion with involvement of the macula. Note that some of the retinal haemorrhages are flame shaped. Note small boat-shaped haemorrhage inferiotemporal which is present beneath the internal limiting membrane (ILM) i.e. sub-ILM haemorrhage.



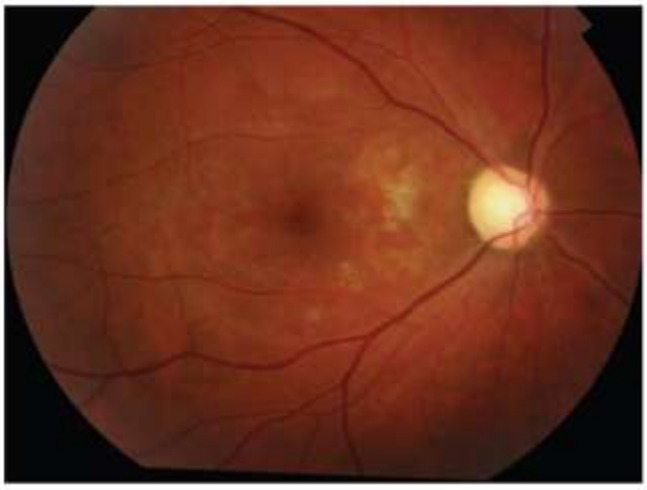
Fluorescein angiography shows good filling of arteries and veins with multiple hypofluoresent areas corresponding with the retinal haemorrhages and CWS were seen on the colour photography. Note the blocking effect of boat-shaped haemorrhage where the retinal circulation could be seen above the layered haemorrhage beneath the ILM (asterisk).



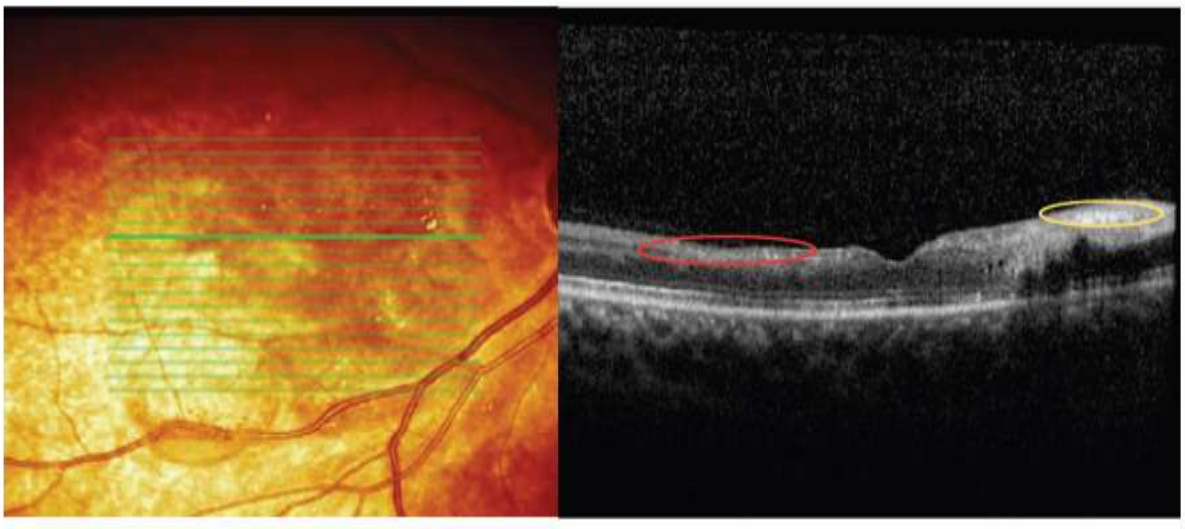
SD-OCT shows detached ILM (arrow), with hyper reflective inner retinal layers corresponding with CWS & infarcted inner layers (Asterisk). Hypo reflective outer layers caused by the blocking effect of inner layers (arrow head). Foveal contour is preserved.



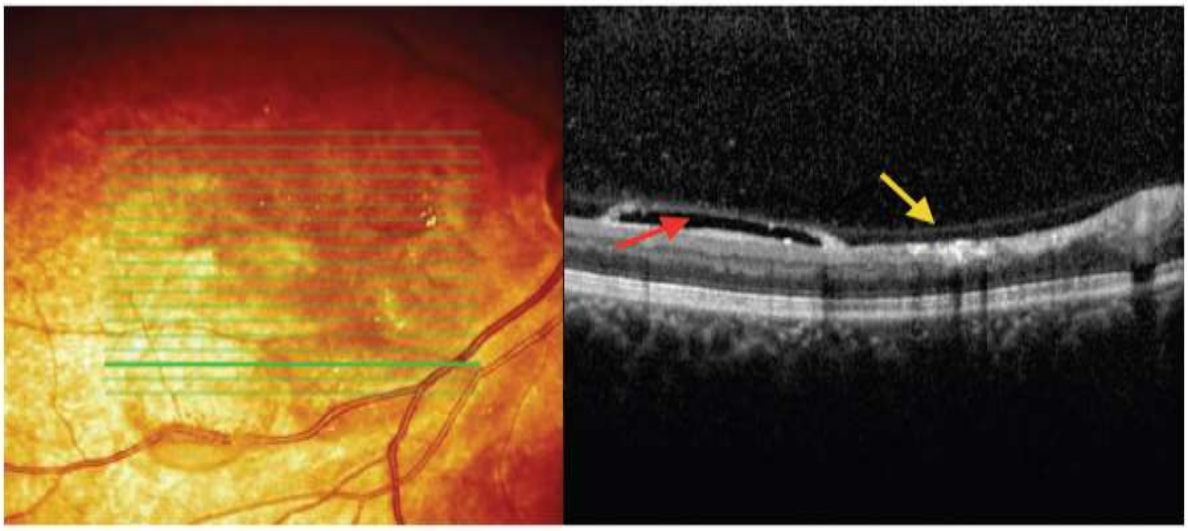
SD-OCT at detached ILM just above the layered haemorrhage (arrow). Note the hyper-reflectivity of the inner retinal layers corresponding with the retinal opacification (arrow head).



Two months later, haemorrhages resolved completely and the retinal opacification improved with some remnant at papillomacular bundle. Note the temporal optic nerve pallor.



SD-OCT two months later showed, atrophy of inner retinal layers (red circle) and persistent of retinal opacification with blocking effect to the outer layers (yellow circle).



SD-OCT at detached ILM with resolved haemorrhage (red arrow). Note the posterior cortical vitreous (yellow arrow).

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