CASE REPORT

Post dengue Purtsher-like retinopathy: a case report

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Abstract

Dengue fever is a common infectious disease that is caused by the dengue virus. This report presents the cases of two patients, a 20-year-old male with history of left renal transplant and a 34-year-old female with Acute Myeloid Leukaemia, who presented at Shifa International Hospital, Islamabad, with sudden, painless decreased vision following a dengue fever infection. The patients' clinical presentations, visual outcomes, fundus findings, and management approaches were carefully documented over six months. Both the patients were treated with non-steroidal anti-inflammatory eye drops, with Case 2 additionally receiving intravenous Methylprednisolone and surgical intervention for recurrent vitreous haemorrhage. They were regularly followed-up and were monitored with serial OCT scans. Both the patients showed improvement in subsequent fundus examinations, OCT scans revealed resolution of intra-retinal oedema and retinal thinning. However, there was only minimal improvement in best corrected visual acuity (BCVA) for both the patients. This case report highlights the importance of comprehensive ophthalmic evaluation, regular follow-up, and appropriate management in patients with post-dengue fever retinopathy.

Keywords: Dengue, Purtscher, Retinopathy.

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Introduction

Dengue fever is a viral disease that is caused by dengue virus, known as flavivirus, which is transmitted via the Aedes mosquito. Dengue fever represents a general well-being issue in tropical and subtropical locales. The worldwide prevalence of dengue has significantly increased in recent years, with an estimated 100-400 million infections occurring annually.[1] Dengue disease can cause a range of clinical signs going from asymptomatic or gentle febrile sickness to extreme structures like dengue haemorrhagic fever (DHF) and dengue shock disorder (DSS), which are related to high mortality.[2]

Although dengue fever- related visual indications are unprecedented, they can cause huge visual hindrances. Ophthalmic complications include anterior uveitis, maculopathy, retinal haemorrhage, vasculitis, optic neuritis, corneal epitheliopathy, and cranial nerve palsies.[3] The pathophysiology of visual contribution is not completely perceived; however, it very well might be connected to procoagulable state by thrombocytopenia and immune mediated inflammatory process.[4] This case report aims to give a point-by-point examination of the ophthalmic manifestations seen in two patients following dengue fever disease, revealing insight into the clinical course, visual results, fundus findings, and the treatment approaches utilised.

Case Report

Case 1: A 20 year old male patient, with a history of left renal transplant and a recent diagnosis of dengue fever presented to the eye OPD at Shifa International Hospital, Islamabad, in September 2022, with sudden, painless, and progressive vision loss in both eyes. His platelet count was 231,000 (150,000 to 450,000/microlitre of blood) along with normal blood cell indices. His IgM test for dengue virus was positive. He had undergone a renal transplant three months ago for hypertension-related kidney injury. One week ago, he had been admitted for supportive treatment of dengue fever. On visual assessment, his best-corrected visual acuity (BCVA) was counting fingers at two feet in the right eye (RE) and counting fingers at one foot in the left eye (LE). Slit-lamp examination did not reveal any anterior segment abnormalities. Fundus examination revealed cotton wool spots at the posterior pole of the retina in both eyes (BE). Optical coherence tomography (OCT) scan demonstrated sub-macular and intraretinal fluid and hyper-reflective areas in BE

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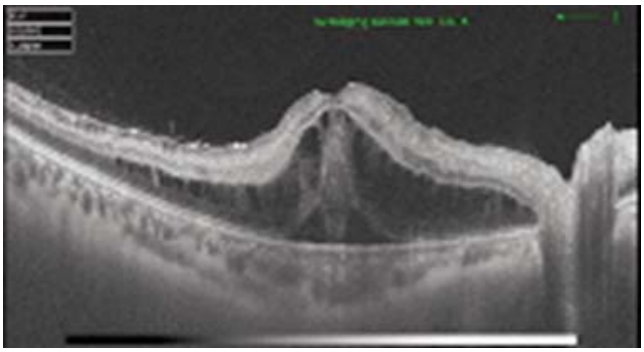

Figure-1A: Case 1 Right eye OCT scan showing intraretinal oedema and hyper-reflective superficial areas corresponding to cotton wool spots

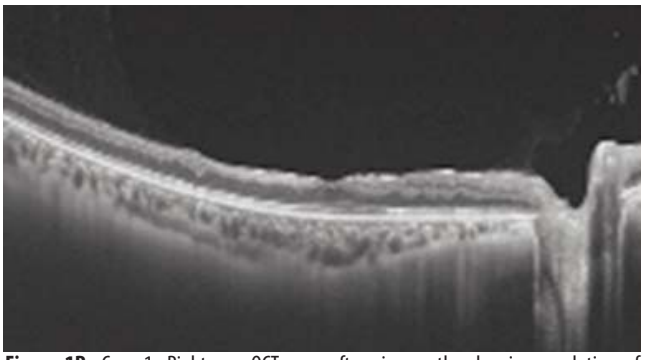

Figure-1B: Case 1, Right eye OCT scan after six months showing resolution of intraretinal oedema and retinal thinning

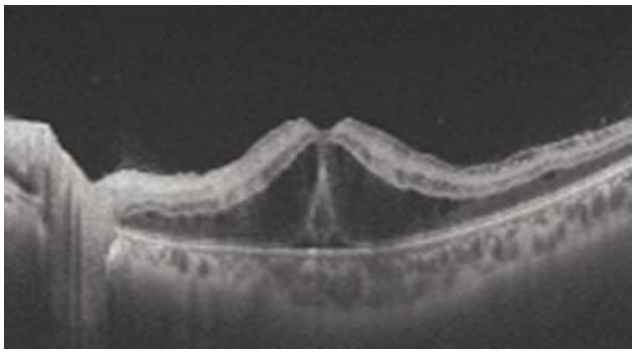

Figure-1C: Case 1, Left eye OCT scan showing intraretinal oedema and hyper-reflective superficial areas corresponding to cotton wool spots.

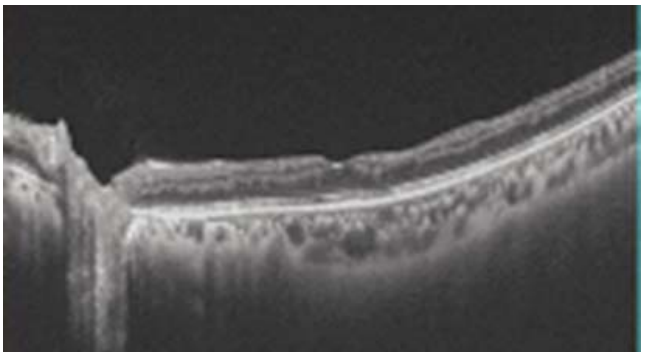

Figure-1D: Case 1, Left eye OCT scan after six months showing resolution of intraretinal oedema and retinal thinning.

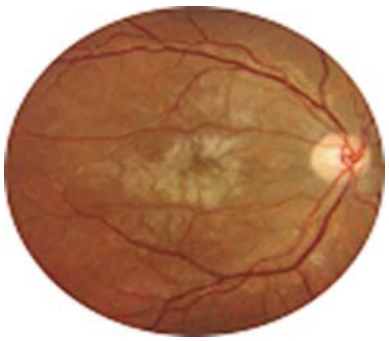

Figure-2A: Case 1, Right eye initial fundus image showing cotton wool spots.

Figure-2B: Case 1, Right eye fundus image after six months showing resolution of cotton wool spots and disc pallor.

Figure-2C: Case 1, Left eye initial fundus image showing cotton wool spots

Figure-2D: Case 1 Left eye fundus image after 6 months showing resolution of cotton wool spots and disc pallor.

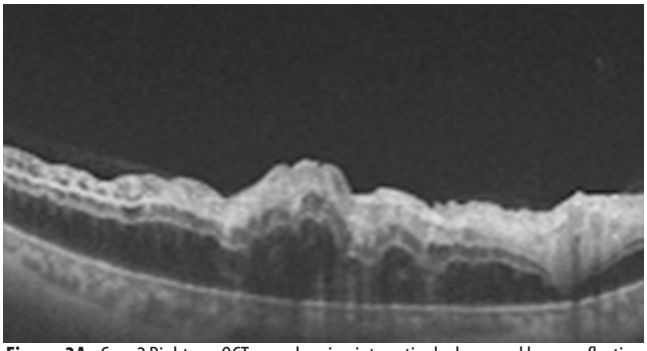

Figure-3A:: Case 2 Right eye OCT scan showing intraretinal edema and hyper reflective superficial areas corresponding to cotton wool spots.

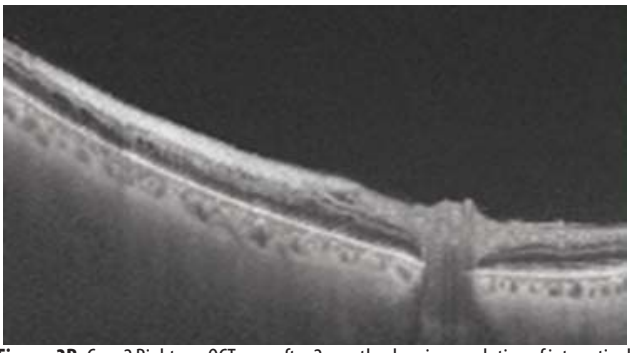

Figure-3B: Case 2 Right eye OCT scan after 2 months showing resolution of intraretinal edema and retinal thinning.

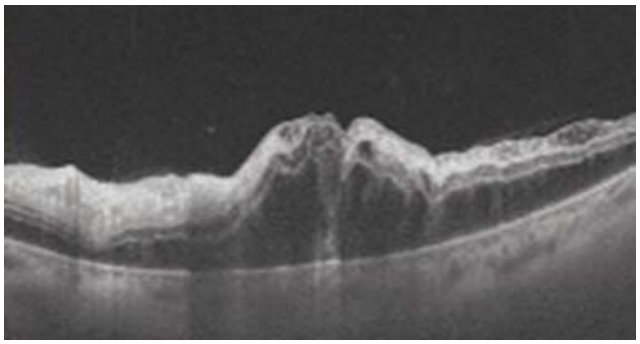

Figure-3C: Case 2 Left eye OCT scan showing intraretinal edema and hyper reflective superficial areas corresponding to cotton wool spots.

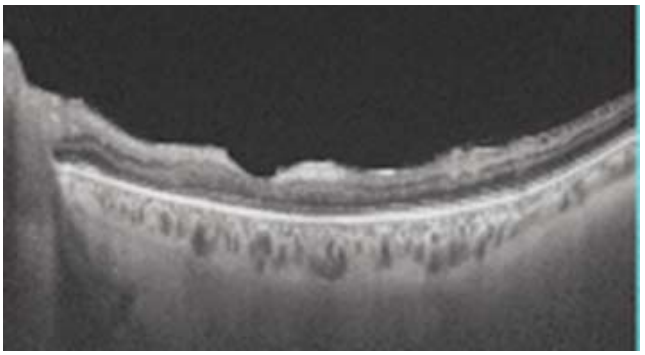

Figure 3D: Case 2 Left eye OCT scan after 2 months showing resolution of intraretinal edema and retinal thinning.

Figure-4A: Case 2 Right eye initial fundus image showing cotton wool spots and retinal haemorrhages.

Figure-4B: Case 2 Right eye fundus image after 6 months showing resolution of cotton wool spots, decreased retinal haemorrhages and disc pallor.

Figure-4C: Case 2 Left eye initial fundus image showing cotton wool spots and retinal haemorrhages.

Figure-4D: Case 2 Left eye fundus image after 6 months showing resolution of cotton wool spots, decreased retinal haemorrhages and disc pallor.

corresponding to ischaemic areas where cotton wool spots were present (Figures 1A and 1C). Optical coherence tomography angiography (OCTA) revealed ischaemic areas involving the fovea in both eyes. The patient was not taking any medication that might have caused retinopathy. Furthermore, the onset of his symptoms post-dengue infection lent further clues to the cause of his retinopathy. A diagnosis of Purtscher-like retinopathy post-dengue infection was made. He was prescribed non-steroidal anti-inflammatory eye drops. The patient underwent regular follow-ups in the eye clinic where he was examined and further investigated with serial OCT scans (Figures 1B and 1D). Over six months, fundus examination demonstrated the resolution of cotton wool spots in both eyes (Figures 2B and 2D). However, over six months, the patient's BCVA did not show much improvement in either eye, with his acuity in RE at counting fingers at two feet and LE 6/45 best corrected to 6/7.5.

A 34-year-old female presented to the eye OPD at Shifa International Hospital, Islamabad, in November 2022, with sudden, painless bilateral diminished vision following a dengue fever infection. She was diagnosed with Acute Myeloid Leukaemia one year ago for which she underwent chemotherapy. Her chemotherapy drugs included Cytarabine and Idarubicin along with Tranexamic acid. She had a positive IgM test for dengue infection and a platelet count of 325,000 (150,000 to 450,000/microlitre of blood) along with normal red cell indices. Her BCVA was counting fingers at two feet in the RE and counting fingers at one foot in the LE. Slit-lamp examination revealed no anterior segment abnormalities. Fundus examination revealed cotton wool spots, flame-shaped haemorrhages, retinal haemorrhages and slight optic disc oedema in both eyes (Figures 4A and 4C). The OCT scan demonstrated intraretinal and submacular fluid and hyper-reflective areas in both eyes (Figures 3A and 3C). The patient was given intravenous Methylprednisolone injection and prescribed oral Prednisolone tablets which were tapered off over two months. She was also prescribed non-steroid anti-inflammatory eye drops for two months. The patient subsequently underwent pars plana vitrectomy and endolaser in her RE because of a recurrent vitreous haemorrhage with improvement to her visual acuity at 6/45 at six months. Her LE acuity was counting fingers at one foot. Subsequent fundus examinations showed the resolution of cotton wool spots and retinal haemorrhages in both eyes (Figures 4B and 4D).

Discussion

Purtscher retinopathy is a form of traumatic retinal angiopathy caused by occlusive microvasculopathy and associated with a constellation of retinal findings, including cotton-wool spots, retinal haemorrhages, optic disc oedema, and Purtscher flecken (areas of inner retinal whitening). When typical retinal findings occur in complete absence of trauma, the term Purtscher-like retinopathy is used. Purtscher-like retinopathy has been associated with multiple clinical entities, including acute pancreatitis.[5] Dengue fever is a disease caused by dengue flavivirus. While dengue is classically a self-limiting infection characterised by an acute onset of fever in conjunction with headache, myalgia, arthralgia, retro-orbital pain, abdominal discomfort, and cutaneous rash, it has some ocular manifestations, including retinal haemorrhages, retinal vasculitis, exudative retinal detachment, and uveitis.[1,4] A few cases of retinopathy in Purtscher-like configuration post-dengue infection have been reported.[6] The ophthalmic manifestations observed in our comprehensive case report provide valuable insights into the ocular complications associated with dengue fever. Both the patients experienced sudden, painless bilateral reduced vision, which is consistent with previous reports.[6] Fundus findings, including cotton wool spots, and flame-shaped retinal haemorrhages, indicated retinal microvascular involvement. OCT scans demonstrated the presence of submacular and intraretinal fluid, along with hyper-reflective areas suggestive of retinal and macular oedema. OCTA revealed parafoveal ischaemia in one patient, which may reflect impaired retinal perfusion due to thrombocytopenia or vasculitis.[7] Currently, there is no recommended treatment for Purtscher and Purtscher-like retinopathy. The most commonly cited treatment option is high dose intravenous corticosteroid.[8] This has shown improvement in some cases,[9,10] although recovery of visual acuity is generally variable.[11] The absence of sub-macular and intraretinal fluid on OCT scans further indicated favourable treatment outcomes. These findings suggest that conservative management and supportive care may be sufficient.[12] It is believed that since the cause of macular oedema and retinal ischaemia is immunogenic, anti-VEGF injections are unlikely to help.[6] The present case report also highlights the diversity of ophthalmic manifestations in dengue fever and the need for a comprehensive ophthalmic evaluation. The first patient had a history of renal transplant and presented with cotton wool spots and macular oedema, which are common features of dengue maculopathy.[12] The patient's blood pressure was measured at every visit and it had been well controlled after renal transplant. He had no visual or ocular complaint before developing dengue fever. Arteriovenous signs and haemorrhages, which are a

hallmark of hypertensive retinopathy, were absent in this case. Cotton wool spots seen in hypertensive retinopathy are not present in Purtsher-like configuration, as in this case.

The second patient had recently undergone chemotherapy for leukaemia and presented with more severe retinal haemorrhages. She had been in remission and not currently on chemotherapy. She had received Cytarabine with known side effects of keratoconjunctivitis, bull's eye maculopathy (rare), and optic atrophy, and had also received Idarubicin with known side effects of icterus and lacrimation. However, this patient had none of these reported side effects. Furthermore, the patient had not reported any previous visual problems before developing dengue fever. Both the patients had not been taking any medications that cause retinopathy in this particular pattern. Furthermore, prescribing treatment to both the patients was challenging given their relatively immunocompromised state. Both the patients had normal anterior segment examination, consistent with most reports of dengue-related ocular involvement. However, anterior segment abnormalities such as subconjunctival haemorrhage, anterior uveitis, and acute angle closure glaucoma have been reported in some cases.[1] Therefore, a thorough slit-lamp examination is warranted when ocular involvement is suspected in patients diagnosed with dengue fever.

Notwithstanding fundoscopy and OCT, other demonstrative modalities like OCTA, fluorescein angiography (FA), indocyanine green angiography (ICGA), electroretinography (ERG), microperimetry, and visual field testing can give helpful data on the degree and seriousness of visual association in dengue fever.[11] Ischaemia, capillary dropout, or neovascularisation can all be detected by OCTA in the retinal and choroidal vasculature. FA can reveal leakage or non-perfusion of retinal vessels or choroidal neovascularisation.[13] ICGA can show hypo-fluorescence or hyper-fluorescence of choroidal vessels or choroidal neovascularisation. ERG can assess the function of the retina and detect abnormalities such as reduced amplitude or delayed implicit time.[14]

Conclusion

Purtscher-like retinopathy following dengue fever is a rare occurrence described in the two adult immunocompromised cases. Both experienced sudden bilateral vision loss following serologically confirmed dengue infection. Classical fundoscopic features as cotton wool spots and retinal haemorrhages were seen.

One case had a unilateral visual recovery whereas the other had bilateral extensive retinal ischaemia and persistent visual impairment. Conservative treatment led to anatomical resolution of retinal lesions, functional visual recovery remained suboptimal, particularly in the presence of severe ischaemia or recurrent haemorrhage.

Recommendations: Recognition of this rare entity can aid in timely diagnosis, patient counselling, and appropriate follow-up to monitor for potential long-term visual sequelae. There is a need for research especially regarding treatment options.

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Conflict of Interest: None.

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AUTHOR'S CONTRIBUTION:
ZA: Main author, discussion and abstract.
MUY: History and physical case 1.
AA: History and physical case 2.
MARA: Concept, treatment and final approval.
RA: References.
AR: Formatting and images.