

¹ A Rare Case of Purtscher's Retinopathy Seen in RTA Patient

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⁴ Received: 12 February 2021 Accepted: 3 March 2021 Published: 15 March 2021

⁵ **Abstract**

⁶ Purtscher's retinopathy was described by German Ophthalmologist Otmar Purtscher in 1910.
⁷ It is an occlusive microvascular retinopathy caused by trauma such as head injury, thoracic
⁸ compressive injury or long bone fractures.¹ Without history of trauma, it can also be due to
⁹ systemic disease like acute pancreatitis, renal failure, lymphoproliferative disorder, valsalva
¹⁰ maneuver, fat embolism syndrome or autoimmune diseases and they present with similar
¹¹ retinal findings and it is called Purtscher like retinopathy.² Patients usually come with
¹² reduced visual acuity following injury. Clinical findings commonly seen in retina include
¹³ cotton wool spots, retinal haemorrhage, areas of retina whitening (Purtscher flecken) or optic
¹⁴ disc oedema. And 60
¹⁵

¹⁶

¹⁷ **Index terms—**

¹⁸ **1 Introduction**

¹⁹ urtscher's retinopathy was described by German Ophthalmologist Otmar Purtscher in 1910. It is an occlusive
²⁰ microvascular retinopathy caused by trauma such as head injury, thoracic compressive injury or long bone
²¹ fractures. 1 Without history of trauma, it can also be due to systemic disease like acute pancreatitis, renal
²² failure, lymphoproliferative disorder, valsalva maneuver, fat embolism syndrome or autoimmune diseases and
²³ they present with similar retinal findings and it is called Purtscher like retinopathy. 2 Patients usually come with
²⁴ reduced visual acuity following injury. Clinical findings commonly seen in retina include cotton wool spots, retinal
²⁵ haemorrhage, areas of retina whitening (Purtscher flecken) or optic disc oedema. And 60% of cases have bilateral
²⁶ involvement. 3 Purtscher flecken, pathognomonic of Purtscher's retinopathy, are typically seen in posterior pole
²⁷ sparing the perivascular areas. 4,5 We report a case of Purtscher's retinopathy following Road Traffic Accident
²⁸ (RTA).

²⁹ **2 II.**

³⁰ **3 Case Presentation**

³¹ complaint of painless diminution of vision in both eyes for 10 days following road traffic accident (RTA). He had
³² history of loss of consciousness for 1 hour but he denied any history of nausea, vomiting or bleeding from nose and
³³ ears. He was admitted in a general hospital where he underwent repair of his lip laceration and open reduction
³⁴ and internal fixation of his both upper limbs. He was discharged from the hospital after nine days stay.

³⁵ Regarding his general examination, he was well oriented but ill-appearing. The sutures were noted on his
³⁶ lip. There was POP cast with arm slings on his both upper limbs. On ocular examination, his unaided visual
³⁷ acuity was 6/24 in right eye and counting fingers at 3m in left eye. Extraocular motility was full in both duction
³⁸ and version movements. Lid and adnexa were normal in both eyes. Anterior segment examination revealed
³⁹ subconjunctival haemorrhage in RE. Cornea was clear in both eyes. Anterior chamber was normal in depth and
⁴⁰ was quiet. The pupillary reaction was sluggish in both eyes and relative afferent pupillary defect (RAPD) could
⁴¹ not be properly assessed. Lens was clear in both eyes.

⁴² Author: e-mail: poe.t.clown@gmail.com On dilated fundus examination with clear vitreous media, optic disc
⁴³ was pink with well-defined margin and cup disc ratio of 0.3 with healthy neuroretinal rim in both eyes. There

6 CONCLUSION

44 were multiple cotton wool spots around peripapillary region, few Purtscher fleckens and sub-retinal haemorrhage
45 in BE while macula was healthy. Intraocular pressure was 12 mm Hg in both eyes.

46 Provisional diagnosis of BE Purtscher's retinopathy with traumatic optic neuropathy was made. Color vision,
47 Humphrey 30-2 visual field test and macula OCT were sent to confirm the diagnosis. He was started on oral
48 prednisolone 60mg (1mg/kg BW) OD for 1 week, oral Pantoprazole 40mg OD for 1 week and topical Ketorolac
49 QID for 2 weeks and was called for follow-up with reports.

50 His color vision was normal in RE but abnormal in LE and visual field deficit in HVF 30-2 was detected in
51 LE. Macula OCT was normal in both eyes.

52 The final diagnosis was made as BE Purtscher's retinopathy with LE traumatic optic neuropathy. Patient was
53 asked to continue oral prednisolone in tapering dose and was called for follow up in one month.

54 At 1month follow-up, his unaided visual acuity was 6/6 in RE and 6/24 in LE. Sub-conjunctival haemorrhage
55 had resolved. On dilated fundus examination with clear vitreous media, optic disc of RE was normal in appearance
56 while mild temporal pallor of disc was noted in LE. About 50% of cotton wool spots had resolved in BE.

57 Regarding treatment, oral prednisolone was continued along with a multivitamin capsule. Patient was advised
58 to follow up in 1 month.

59 4 III.

60 5 Discussion

61 Pathogenesis of Purtscher's retinopathy has been assumed due to microembolization of retinal vessels either
62 from fat emboli in patient with long bone fractures or disseminated pancreatic proteases in acute pancreatitis.
63 The possible emboli in Purtscher's retinopathy may include air, fat, leucocyte aggregates, platelets and fibrin.
64 It causes arteriolar precapillary occlusion and retinal nerve fiber layer infarction presenting with cotton-wool
65 spots. 4,6 In other words, it is a kind of retinal vasculitis induced by lipase after systemic injury which leads
66 to thrombosis and vascular occlusion. 4 The pathognomonic sign is Purtscher flecken and they can be found in
67 inner retina between the retinal arterioles and venules. And the reason why Purtscher flecken were confined to
68 the posterior pole can be explained because it is prone to get embolic occlusion due to less anastomoses and less
69 arterioles in that area. 4,5 In our case, the patient had fractures in both upper limbs, making fat emboli a likely
70 cause.

71 The commonest clinical signs of the disease mentioned in one study were cotton wool spots (93%), retinal
72 haemorrhages (65%) and Purtscher flecken (63%). 2 It was relevant with our case because there were all three
73 significant clinical signs in BE. In 4% of patients with long bone fracture, there may be only cotton-wool spots
74 and retinal haemorrhages but not Purtscher flecken. 4 Other ocular findings which can be seen are optic atrophy,
75 color RPE changes and dilated and tortuous retinal vessels.

76 Few diagnostic criteria for Purtscher retinopathy have been defined in literatures. Our diagnosis was based
77 on criteria given by Miguel el at 2 who had defined it with presence of at least three of the following criteria:
78 Purtscher flecken, cotton-wool spots confined to the posterior pole, retinal haemorrhage, relevant etiology and
79 complementary investigations compatible with diagnosis.

80 There is no standard treatment mentioned in the literatures. Most of the patients recover without any
81 treatment. 7 But the vision improvement was well noted in some studies after giving intravenous methyl
82 prednisolone and oral prednisolone after initial trauma. In the study by Atabay et al 8 , intravenous methyl
83 prednisolone was given to a Purtscher's retinopathy patient 3 weeks after the initial trauma but visual acuity
84 improved by more than 3 lines after 3 months. In Wang et al 9 , the patient with the history of trauma received
85 1 g of intravenous methylprednisolone for 3 days followed by oral steroids for 3 weeks and the improvement of
86 vision from CF to 6/12 was noted. Normalization of fundus was 40% after 2 months in Miguel's study. 2 In our
87 case, visual acuity improved from CF3m to 6/24 with oral prednisolone (1mg/kg) at 1 month follow up.

88 IV.

89 6 Conclusion

90 Purtscher's retinopathy is a rare condition in our practice but it can be diagnosed clinically with its significant
91 clinical signs and the relevant history of trauma or other associated diseases. And treatment with oral
92 corticosteroid can improve the visual acuity. ¹



Figure 1: A



Figure 2: Figure 1 :

6 CONCLUSION



Figure 3: Figure 2 :

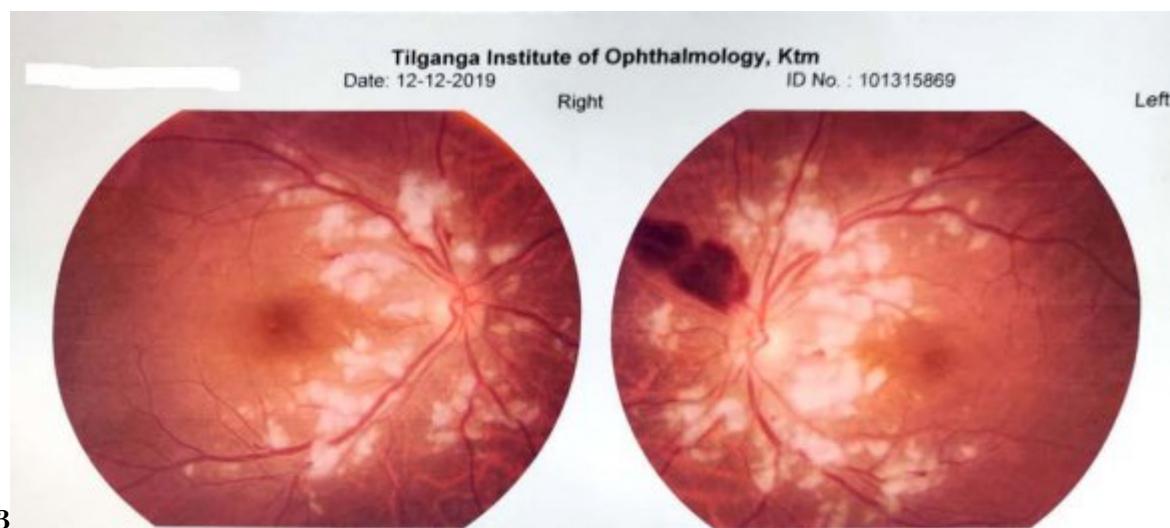


Figure 4: Figure 3 :

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Figure 5: Figure 4 :A

Name: Karki, Chandra

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Exam Date: 12/12/2019



DOB: 1/1/1964

Exam Time: 11:55 AM

Tilganga Institute of Ophthalmology

Gender: Male

Serial Number: 4000-8623

Technician: Operator, Cirrus

Signal Strength: 4/10

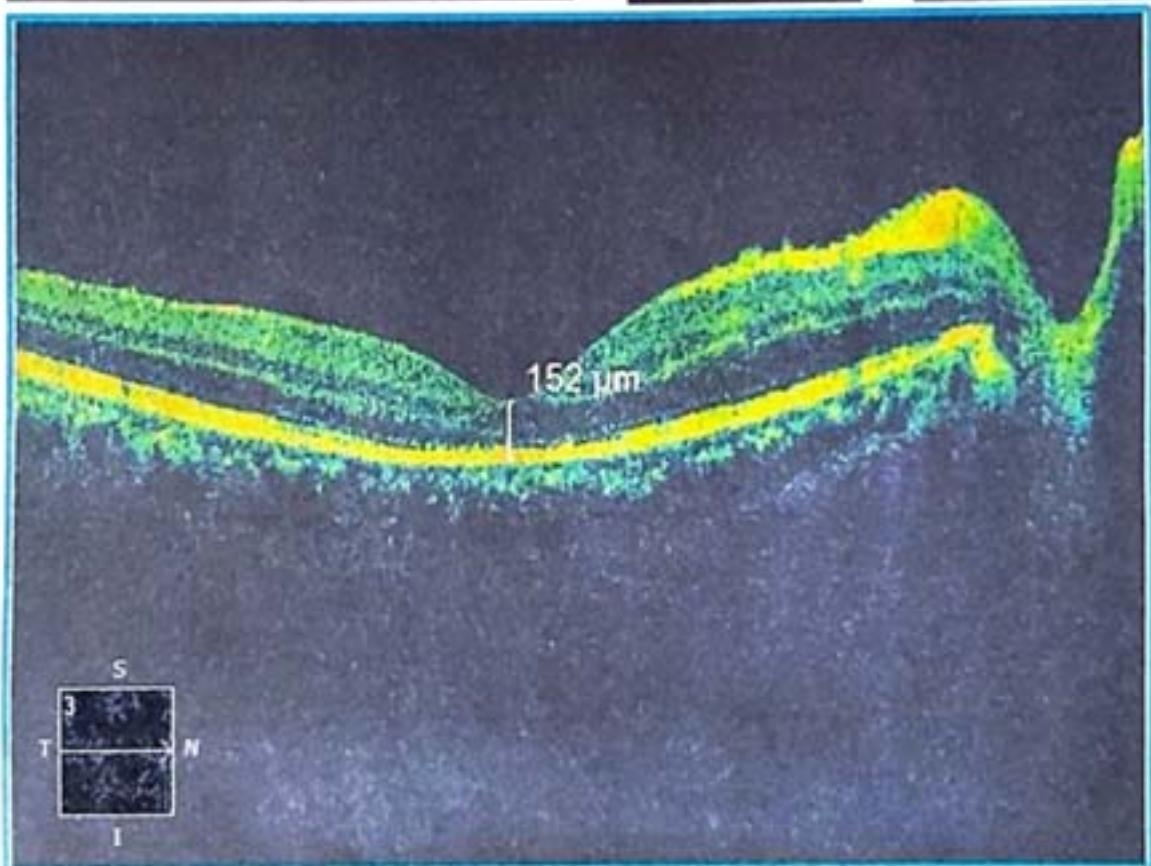
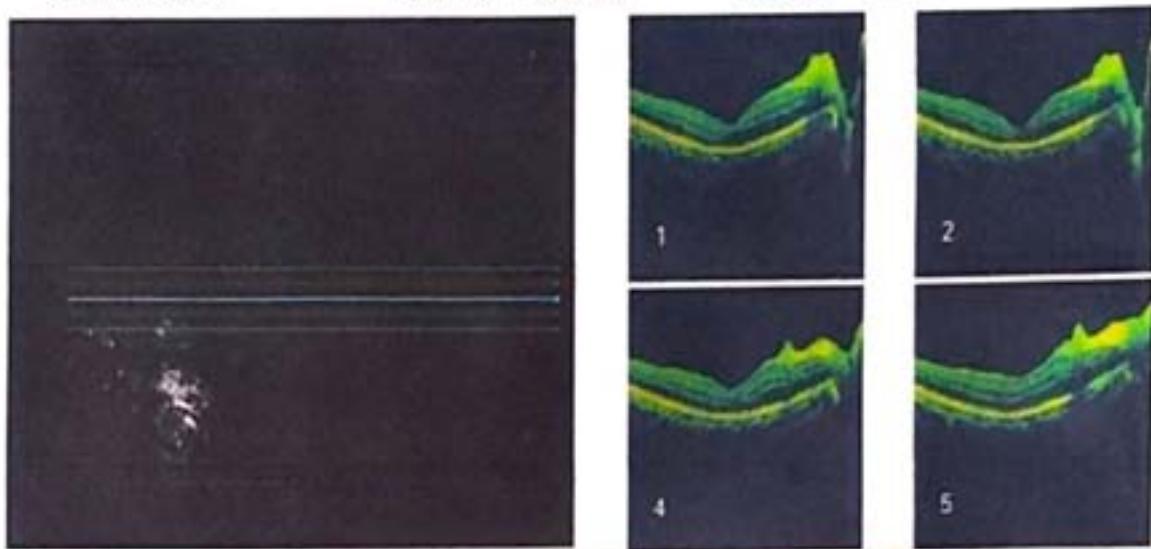
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93 .1 Consent

94 The patient has no objection to use his photos in academic and research work.

95 .2 Source of funding

96 None.

97 .3 Conflict of interest

98 None.

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