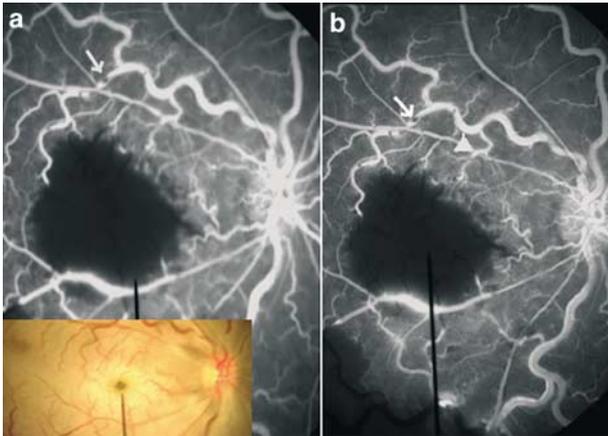


## Macular infarction a presentation of sickle cell crisis

A 24-year-old black male with sickle cell disease (SCD) 'SS' presented to the emergency room (ER) in sickle cell crisis with acute painless loss of vision OD, chest, and leg pains since one day. His visual acuity was HM OD and J1 OS with 3+ afferent pupillary defect OD. Anterior segment examination was unremarkable.

Ophthalmoscopy OD revealed retinal pallor with dilated tortuous vessels. OS fundus was normal. Systemic evaluation revealed icterus with normal pulmonary, cardiovascular, or neurological examination with no history of comorbid conditions. The haemoglobin was 9.6 gm/dl and haematocrit was 27.9%. Exchange transfusion was performed subsequent to hydration.

At 1 week the visual acuity (VA) was HM OD and 20/25 OS. Ophthalmoscopy OD revealed pale, white, thickened retinal lesion centred on the fovea, arterial attenuation, cherry red spot, and pale optic disc (Figure 1 inset). Fluorescein angiography (FA) OD demonstrated perifoveal arteriole occlusions with enlargement of the FAZ (Figure 1). Vessels had areas of blocked fluorescein in early and late phases (Figure 1a and b), while hyperfluorescein areas (Figure 1b) in the late phases (staining). FA OS was normal.



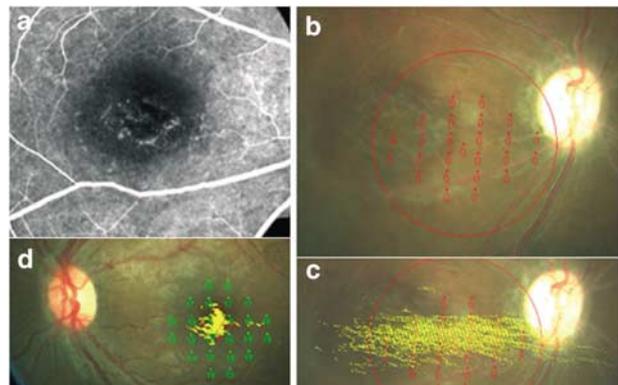
**Figure 1** (a) Fluorescein angiogram OD (1 week) early phase showing a marked increase in size of the FAZ due to microvascular occlusion. The white arrow shows that the area of block fluorescence may be due to microemboli. Inset: Photograph of the fundus of the right eye at 1 week. (b) Fluorescein angiogram OD (1 week) late phase showing marked increase in the size of FAZ due to microvascular occlusion. The white arrow shows the area of block fluorescence, while the white arrowhead shows the area of hyperfluorescence (staining) may be suggestive of microemboli and/or slugging of sickled cells with slowed circulation in the venules.

At 3 months VA was CF 3 feet OD, 20/20 OS. Ophthalmoscopy OD revealed pale disc with marked arterial attenuation and pigmentary changes in the macula (Figure 2a). Macular perimetry (Nidek Technologies, Vigonza, Italy) revealed unstable fixation with absolute macular scotoma OD with normal findings OS (Figure 2b-d). His haemoglobin was 9.5 gm/dl and haematocrit was 26.0%.

## Comments

Occlusive disease of the peri-foveal arterioles is known to occur in sickle cell disease.<sup>1,2</sup> We present a dramatic occlusive event of the macula surrounding the foveal avascular zone, resulting in severe and permanent loss of vision. We are unaware of any previous report of FA showing possible microemboli in the retinal vessels with macular infarction in SCD. Direct sickling may cause occlusion in arterioles or in capillary beds creating a 'log-jam' in the arterioles.<sup>3</sup> In this case, the occlusions surrounded the macula from multiple directions, suggesting perifoveal arteriolar occlusion due to microemboli and/or slugging of sickle cells with slowed circulation in the venules.

Our patient presented with an acute visual loss resulting in irreversible macular infarction. His visual recovery was minimal because of delay in presentation.



**Figure 2** (a) Fluorescein angiogram OD (3 months) late phase showing enlargement of FAZ, with pigmentary changes suggestive of macular infarction. (b) Macular perimetry OD with MP-1 showing absolute scotoma. (c) Fixation stability mapping by the MP-1. The yellow dots are the fixation points during the test showing unstable fixation. (d) Macular perimetry OS by MP-1 showing no scotoma and central stable fixation.

## References

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KV Chalam and VA Shah  
Department of Ophthalmology  
University of Florida College of Medicine  
580 W 8<sup>th</sup> street, Jacksonville, FL 32209 USA

Correspondence: KV Chalam

Tel: + 1 904 244 9361

Fax: + 1 904 244 9391

E-mail: kvchalam@aol.com

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