IDCases 1 (2014) 82–83

Contents lists available at ScienceDirect

IDCases

journal homepage: www.elsevier.com/locate/idcr

Case Illustrated

Malarial retinopathy affecting visual function in a Malawian adult with cerebral malaria

Katherine Piddock [a,*], Nicholas Beare [b,c], Ian MacCormick [a,b]

[a] Malawi-Liverpool-Wellcome Trust Clinical Research Programme, PO Box 30096, Chichiri, Blantyre 3, Malawi
[b] Department of Eye and Vision Science, Faculty of Health & Life Sciences, University of Liverpool, Room 356, 4th Floor, UCD Building, Daulby Street, Liverpool L69 3GA, UK
[c] Royal Liverpool University Hospital, St. Paul's Eye Unit, Prescot Street, Liverpool, Merseyside L7 8XP, UK

ARTICLE INFO

Article history:
Received 21 August 2014
Received in revised form 3 October 2014
Accepted 3 October 2014

Keywords:
Malaria
Cerebral malaria
Sub-Saharan Africa
Malarial retinopathy
Retinopathy

Cerebral malaria is uncommon in Malawian adults, at least in part because of immunity generated by exposure to endemic *P. falciparum*. Malarial retinopathy has been well characterized in children in sub-Saharan Africa, and Asian adults, but rarely described in adults from sub-Saharan Africa [1]. Some of the features of adult and pediatric malarial retinopathy are different [2] but it is not known whether this is due to contrasting physiology or genetics.

A 23-year-old male with a 6-day history of headache was found unconscious at home and admitted to Queen Elizabeth Central Hospital, Malawi. The past medical history included previous uncomplicated malaria. He had no history of diabetes, TB, HIV or ocular pathology.

On admission the patient was febrile and tachycardic, with a Glasgow Coma Score of 6/15 (E4, M1, V1) and absent 'doll's eyes' reflex. Dilated indirect ophthalmoscopy revealed bilateral retinal whitening, white-centered hemorrhages, cotton wool spots and disc hyperemia. There was no papilledema or vessel discoloration. Rapid diagnostic test for *P. falciparum* malaria was positive. The patient was treated for cerebral malaria and suspected subclinical seizures.

On waking 7 days after admission the patient reported poor vision in both eyes. Distance visual acuity was poor but partially improved with pinhole (Snellen acuity: Right eye 6/16 unaided, 6/7 pinhole; Left eye 6/10 unaided, 6/8 pinhole). Color vision was also reduced, worst in the right eye. Repeat ophthalmoscopy revealed similar, less severe, signs to those seen on admission (Fig. 1, A and B).

Five weeks after discharge visual acuity had improved further (Right eye 6/14 unaided, 6/6 pinhole; Left eye 6/5 unaided, 6/5 pinhole). Red desaturation remained in the right eye. Retinal signs had improved but not entirely resolved (Fig. 1, C and D).

Fundus abnormalities have been reported in Sudanese adults with cerebral malaria [3], but not in detail. To the best of our knowledge, resolution of retinal structure and function following cerebral malaria has been described only once in an Asian adult [4], and never in adults from sub-Saharan Africa.

The features of malarial retinopathy described in our report are similar to those described in Asian adults, including an absence of the retinal vessel abnormalities often seen in children [2]. This suggests that this phenotype might depend more on pediatric

* Corresponding author at: Malawi-Liverpool-Wellcome Trust Clinical Research Programme, PO Box 30096, Chichiri, Blantyre 3, Malawi. Tel.: +265 1874628.
E-mail address: kpiddock@doctors.org.uk (K. Piddock).

http://dx.doi.org/10.1016/j.idcr.2014.10.003

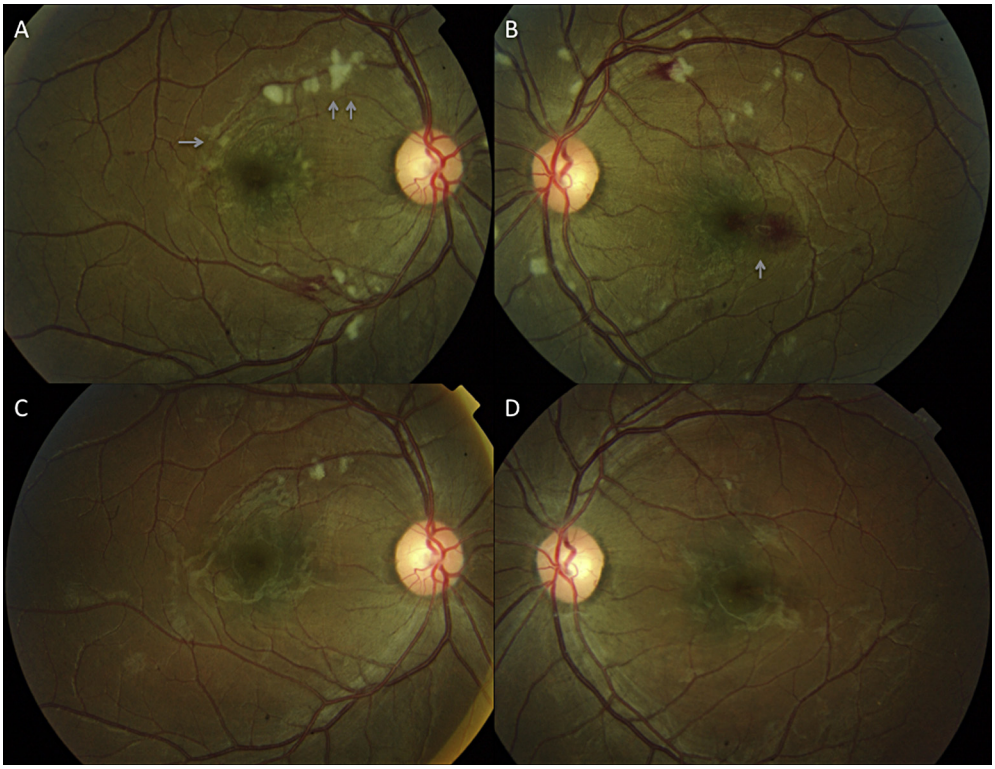

Fig. 1. Retinal images of the right and left eyes 7 days after admission with cerebral malaria (A and B), and 7 weeks later (C and D). Multiple cotton wool spots [double arrow], with patches of whitening in the peri-foveal and macular areas [arrow] are visible (A). Several small retinal hemorrhages are apparent bilaterally with some retinal edema in the left fovea (B) (arrow). After 7 weeks only small residual cotton wool spots remain bilaterally (C and D). Slight whitening in the right fovea is evident (C) but hemorrhages are no longer visible.

physiology and less on host or parasite genetic variables related to geography.

Conflicts of interest

Drs MacCormick and Piddock report grants from The Wellcome Trust, during the conduct of the study. Dr. Beare reports grants from The Wellcome Trust, during the conduct of the study and advisory board fees from Alimera Sciences and Novartis, outside the submitted work.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Acknowledgements

We are grateful to the patient for giving consent for this case report. We also acknowledge The Wellcome Trust who supported this work.

References

[1] MacCormick IJ, Beare NAV, Taylor TE, Barrera V, White VA, Hiscott P, et al. Cerebral malaria in children: using the retina to study the brain. Brain 2014;137:2119–42.
[2] Beare NAV, Taylor TE, Harding SP, Lewallen S, Molyneux M. Malarial retinopathy: a newly established diagnostic sign in severe malaria. Am J Trop Med Hyg 2006;75:790–7.
[3] Shigidi MM, Sokrab TO, Mukhtar MM, Idris MN. Cerebral malaria in adult Sudanese patients. Clinical presentation and outcome. Neurosciences (Riyadh) 2006;11:59–60.
[4] Maude RJ, Kingston HWF, Joshi S, Mohanty S, Mishra SK, White NJ, et al. Reversible microvascular changes in severe malaria. short report: reversibility of retinal microvascular changes in severe falciparum malaria. Am J Trop Med Hyg 2014;91:493–5.