

## Long-term visual follow-up in children with malarial retinopathy

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**Purpose:** Paediatric cerebral malaria (CM), which results in coma, is associated with a distinct group of changes in the retina (eg retinal whitening, retinal haemorrhages) which together are called malarial retinopathy. These retinal changes have considerable diagnostic and prognostic value (Beare et al, 2004, Arch Ophthalmol 122:1141). What is less clear is whether CM has long term visual consequences either due to retinal or central nervous system damage.

**Methods:** We recruited 54 participants who had retinopathy-confirmed paediatric cerebral malaria (CM group; mean age at time of admission: 57 months; mean time since admission: 76 months; mean age at time of testing: 124±26 months) and compared their performance with 49 hospital admission controls (CON group; mean age 116 ± 23 months; t-test for group ages: t=1.6, p>0.05). Monocular visual acuity (VA), contrast sensitivity (both tested using Lea symbols) and vernier offset hyperacuity were tested in both eyes using Test Chart Pro 2000 software run on a laptop computer. In order to examine higher order vision, and an aspect of visual function which has a temporally extended developmental profile, we used a handheld test of global radial shape discrimination (hRSD; Wang et al, 2009, OVS 86:695). This measured the threshold for detecting distortions in circular radial frequency patterns, recording them as a LogMAR value.

**Results:** We found no statistically significant differences between groups for any of the aspects of vision tested. For VA, values were as expected for the ages tested (CM RE:-0.07±0.14; LE: -0.08±0.15 LogMAR; CON RE:-0.12±0.14; LE:-0.09±0.12 LogMAR; mean±SD). However, for the hRSD test, thresholds for detecting distortion were higher than anticipated based on published reports. For participants aged 9-11y average thresholds were CM: -0.41±0.17, CON: -0.44±0.24 LogMAR. In both groups this was well above the previously published value for this age range of approximately -0.80 LogMAR.

**Conclusions:** We have confirmed that the retinal damage observed in CM does not appear to have long-term consequences for visual function. However, higher level visual function may be generally compromised in the population we have studied.

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