Myelinated retinal nerve fibres – congenital or acquired?

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INTRODUCTION

- Myelinated retinal nerve fibres (MRNFs) are found in 1% of the population, affecting both eyes in 7% cases(1)
- Believed to be congenital developmental anomalies, though increasing evidence of acquired MRNFs, with or without ocular or systemic associations(2)
- MRNFs are produced by oligodendrocyte-like glial cells, and are anatomically and histologically akin, but discontiguous to MNFs in the optic nerve(3)

METHODS

- Three cases of new onset acquired myelinated retinal nerve fibres of the optic disc were referred to our tertiary centre
- We herein report the history, the ocular features, the systemic findings, and retinal imaging for each case

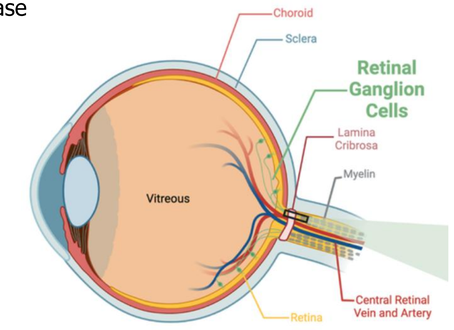


Figure 1: Schematic diagram of retinal ganglion cell axons in the optic nerve and nerve fibre layer of the retina(4)

RESULTS

CASE 1

Presentation

- 18♂ with oligoarticular JIA and right eye (RE) active anterior uveitis (diagnosed at 7YO)
- Presenting RE visual acuity (VA), 0.08 LogMAR

Clinical course

- Frequent relapses of ocular and joint inflammation despite maximal treatment
- Secondary glaucoma requiring trabeculectomy at 9YO
  - Right hypotonous maculopathy and chronic disc swelling (VA 0.98) until 11YO
- Acquired right-sided MRNFs first documented, eight years after resolution of hypotonous disc swelling. These have remained static.
- Latest RE 0.84 improving to 0.44 pinhole, LE -0.1



Figure 2, Case 1. RE fundal photographs demonstrating acquired, non-progressive MRNFs

CASE 2

Presentation

- 15♀ asymptomatic change in RE disc appearance
- Nil past medical, nor family history of ocular, systemic or inherited disease

Examination

- Refraction; RE 0.0/-0.50 at 110, LE +0.25/-0.25 at 60
- VA; 0.00 LogMAR both eyes
- Posterior segment (acquired right-sided MRNFs) (Figure 3)

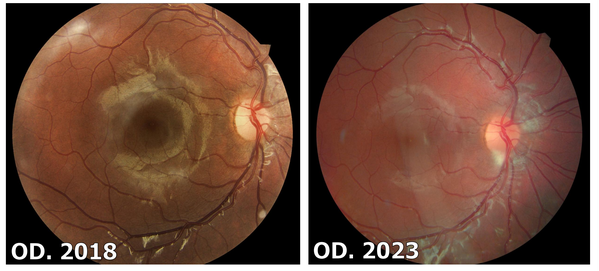


Figure 3, Case 2. RE fundal photographs showing acquired MRNFs inferior to the optic disc

CASE 3

Presentation

- 13♀ asymptomatic change in RE disc appearance
- Nil past medical, nor family history of ocular, systemic or inherited disease

Examination

- Refraction; RE -0.25/-0.25 at 90, LE +0.25/-0.50 at 60
- VA; RE 0.02, LE 0.0 unaided, normal stereoacuity
- Colour; RE 15/17, LE 16/17
- Visual fields and EOM; Full (24-2 Humphrey) and complete
- Posterior segment (acquired right-sided MRNFs)

Clinical course

- Asymptomatic, with non-progressive unilateral MRNFs (Figure 4).

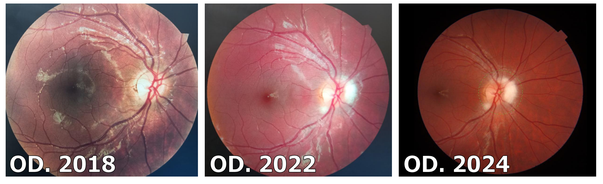


Figure 4, Case 3. RE fundal photographs demonstrating acquired, non-progressive MRNFs

CONCLUSIONS

- Three patient case-series of acquired non-progressive MRNFs, two of which we may newly classify as 'static idiopathic isolated acquired MRNFs ('SIIAM')
- The presence of this newly described group of patients challenges the current postulated mechanisms of acquired MRNFs
- Further studies are required to understand the underlying mechanisms of this heterogenous condition

References:

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The presenter has no financial interests in the material presented