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Case report

Acute myopic shift in a patient with systemic lupus erythematosus

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ABSTRACT

Purpose: To describe a rare case of acute, transient myopic shift occurring as a feature of a flare of systemic lupus erythematosus.

Observations: A 22-year-old Indigenous Australian woman with diagnosed systemic lupus erythematosus was admitted with blurry vision and periorbital oedema. She had a refractive error of −7.50 DS in the right eye and −3.50 DS in the left eye and cotton wool spots throughout the posterior poles of the retina of each eye. Treatment with intravenous and oral steroids resulted in rapid resolution of myopia and improvement in visual acuity.

Conclusions and importance: Systemic lupus erythematosus disproportionately affects more indigenous than non-indigenous Australians with greater disease burden and severity. This case describes a rare manifestation of this disease.

1. Introduction

Acute myopic shift is associated with conditions including ocular inflammation and trauma, diabetes, pregnancy and medications such as topiramate. We present a rare case of an acute, transient myopic shift occurring as one of several features of a flare of systemic lupus erythematosus (SLE).

2. Case report

A 22-year-old indigenous woman of the Northern Territory of Australia was admitted to hospital with painless blurry vision, periorbital oedema, an altered mental state, fever of unknown origin and anaemia. She was taking hydroxychloroquine 200 mg daily for treatment of SLE complicated by lupus nephritis. There was no previous history of ocular disease, trauma or surgery and she did not use spectacle correction.

On ocular examination, the visual acuity was hand movements in the right eye and 20/200 in the left eye, which improved to 20/125 in the right eye and 20/40 in the left eye using a pinhole occluder. Subjective refraction revealed a refractive error of −7.50 DS in the right eye and −3.50 DS in the left eye, which improved her visual acuity to 20/20 in the right eye and 20/16 in the left eye. Intraocular pressure on Goldmann applanation was 10 mmHg in the right eye and 11 mmHg in the left eye. Ocular motility was full and pupil reactions were normal. There was periorbital oedema and conjunctival chemosis in both eyes. The anterior chambers appeared shallow bilaterally. There was no inflammation in the anterior chamber or vitreous humour. Dilated fundus examination revealed multiple cotton wool spots and retinal striae throughout the posterior pole of both eyes (Fig. 1). There were no peripheral retinal abnormalities. The cotton wool spots were hypoautofluorescent on fundus autofluorescence (Fig. 1). A fundus fluorescein angiogram was performed, which revealed a small area of venous dye leakage with surrounding capillary dropout superior to the macula in the right eye; there were microaneurysms in the left eye with no leakage of dye (Fig. 1). B-scan ultrasound confirmed anterior displacement of the lens in both eyes and did not demonstrate any signs of posterior scleritis such as scleral thickening or T-sign. An MRI of the brain was performed, which did not demonstrate any ocular, orbital or cerebral pathology, however no dedicated orbital views were done. A-scan biometry was performed, which demonstrated an axial length of 23.03 mm in the right eye and 23.08 mm in the left eye, and an anterior chamber depth of 2.65 mm in the right eye and 3.47 mm in the left eye. Laboratory investigations indicated anaemia (haemoglobin 84 g/L) and hypoalbuminaemia (albumin 24 g/L) and positive results for antinuclear antibodies (1:320 with a nucleolar staining pattern) and anti-double-stranded DNA antibodies (8 IU/mL).

The patient was diagnosed with a flare of SLE and was administered IV methylprednisolone 500 mg daily for three days followed by oral prednisolone 40 mg daily. Her visual acuity was 20/16 in each eye following 14 days of steroid treatment. On repeat A-scan biometry her axial lengths remained unchanged but her anterior chamber depths

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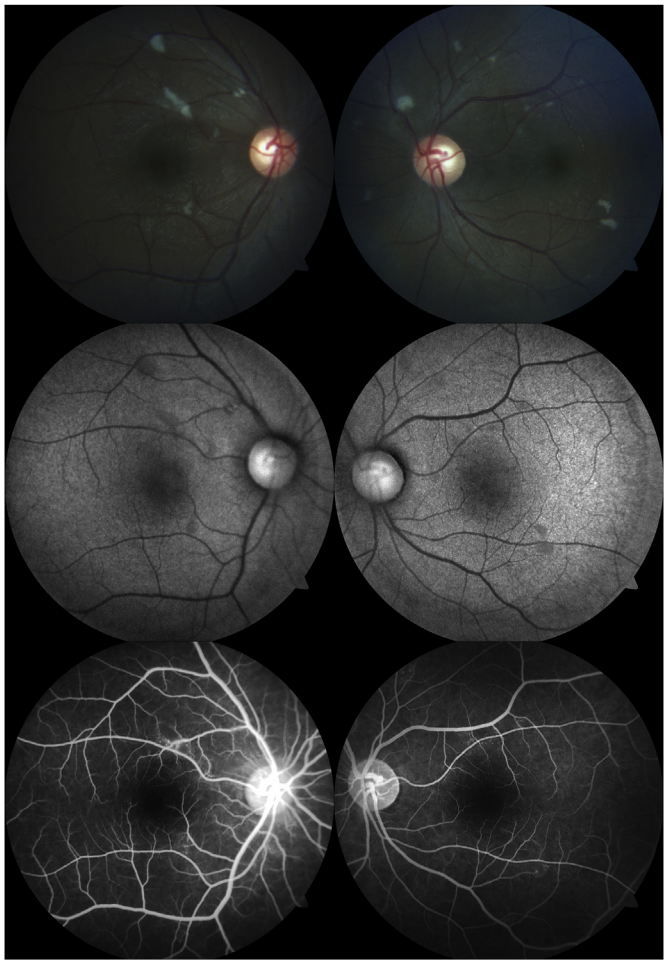

Fig. 1. Colour fundus photographs (top), fundus autofluorescence (middle) and fundus fluorescein angiograms (bottom) at presentation. (For interpretation of the references to colour in this figure legend, the reader is referred to the Web version of this article.)

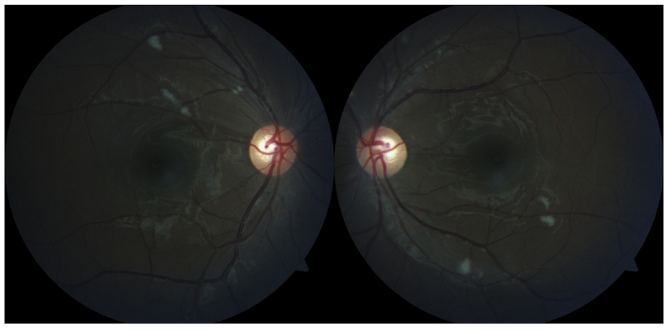

Fig. 2. Colour fundus photograph at three weeks following treatment showing reduction in size and number of cotton-wool spots. (For interpretation of the references to colour in this figure legend, the reader is referred to the Web version of this article.)

increased to 3.58 mm in the right eye and 3.57 mm in the left eye. Her oral prednisolone was slowly weaned and she was commenced on IV rituximab. Her cotton wool spots on examination were slightly reduced in size and number after three weeks of treatment (Fig. 2). At a one-month follow-up examination her unaided visual acuity was 20/12.5 in each eye and there were no remaining cotton wool spots on dilated fundus examination.

3. Discussion

The proposed mechanism of this patient's acute myopic shift is uveal effusion with associated ciliary body swelling, secondary to SLE-induced vasculitis of the choroidal circulation. This leads to anterior displacement of the iris and lens, which narrows the anterior chamber, and relaxation of the zonules, causing an increase in lens power, which results in lenticular myopic shift.[1,2] These anatomical changes may be visualised using ultrasound biomicroscopy.[1] Only a small number of cases of acute myopic shift occurring in SLE have been described in the literature, with ciliochoroidal effusion leading to anterior displacement of the iris and lens being the most commonly reported mechanism.[1,3–6] Other causes of ciliochoroidal effusion include posterior scleritis,[7] topiramate[8] and hydrochlorothiazide.[9]

Because of the rarity of this condition, other causes of reduced vision associated with SLE must also be excluded, such as uveitis (infective and non-infective causes), posterior scleritis, lupus retinopathy and choroidopathy and optic neuropathy.[2,10] Scleritis in particular is associated with active lupus and may also cause a ciliochoroidal effusion that leads to a myopic shift; however, pain is a distinguishing feature of scleritis that is not present in SLE-induced vasculitis and ciliochoroidal effusion.

The prevalence of SLE in indigenous Australians is between 13 per 100,000 and 93 per 100,000, which is two to four times more prevalent than the non-indigenous population.[11–14] Similarly, the prevalence of SLE and other rheumatic diseases is higher in the indigenous populations of North America, Canada and New Zealand.[15] SLE-related complications such as lupus nephritis are more frequent[16] and severe[17] in indigenous populations and premature death is likelier to occur in indigenous populations.[14] To our knowledge this is the first reported case of acute SLE-induced myopia in an Indigenous Australian.

4. Conclusions

SLE is a rare cause of acute myopic shift that responds rapidly to systemic corticosteroid therapy. It should be considered in a patient with SLE who presents with painless blurry vision. SLE disproportionately affects indigenous individuals with greater frequency and severity than non-indigenous individuals.

Patient consent

Consent to publish the case report was not obtained. This report does not contain any personal information that could lead to the identification of the patient.

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Authorship

All authors attest that they meet the current ICMJE criteria for Authorship.

Declaration of competing interest

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://

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