due to a skull base metastasis compressing the left jugular vein.⁸ The second had complex intra-cranial vascular malformations which resulted in bilateral jugular vein occlusion and left optic atrophy suspected to be due to papilloedema.⁹ Our patient had long standing symptoms and interestingly presented with a reduction in visual acuity due to optic nerve dysfunction. Although his acuity improved once the intracranial hypertension was controlled, he did develop permanent optic nerve dysfunction as evidenced by visual field testing. All investigations in our patient were negative and we are unable to explain why he developed spontaneous bilateral jugular vein thrombosis. This condition is rare, but should be considered in patients with papilloedema and a negative MRI scan.

Acknowledgements

Competing interests: none.

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Eye (2006) **20**, 249–250. doi:10.1038/sj.eye.6701825;
published online 13 May 2005

Sir, Corneal endothelial deposits associated with rifabutin treatment in Crohn's disease

Abstract

Rifabutin is a broad spectrum antibiotic used to treat mycobacterial infection in HIV patients, and more recently as a treatment for Crohn's disease. Corneal endothelial deposits have been described in association with long-term rifabutin treatment in HIV patients, but have not previously been reported in patients treated for Crohn's disease. We report a case of endothelial corneal deposits associated with 3 years treatment of rifabutin in Crohn's disease. The underlying process resulting in corneal deposits is still poorly understood. The occurrence of corneal deposits in a patient treated for Crohn's disease, with no other significant past medical history, would support the theory that they could be due to the systemic toxicity of rifabutin.

Case report

A 20-year-old female was referred by her optician with corneal endothelial deposits. She had been taking rifabutin for Crohn's disease for 3 years. There was no other significant past medical history. Her visual acuity on presentation in each eye was 6/9 unaided, improving to 6/6 with glasses. She had no visual symptoms. Ophthalmological examination revealed yellowish brown corneal endothelial deposits evenly distributed circumferentially in both cornea (Figure 1). There was no history or signs suggestive of primary uveitis. Ocular examination including colour vision and visual fields were otherwise within normal limits. On review 4 months later, her deposits remained static. Following this visit, the patient discontinued her treatment with rifabutin against medical advice. On review at 4 months following discontinuation of treatment her deposits persisted and showed no change in colour or distribution. However, she remained asymptomatic. Although rifabutin has been known to accumulate in the anterior part of the lens¹ and may be associated

Figure 1 Corneal Endothelial Deposits Four Months After Discontinuation Of Rifabutin.

with retinal toxicity,¹ our patient did not have any lenticular involvement or retinal dysfunction.

Discussion

Rifabutin is a broad-spectrum, semisynthetic ansamycin antibiotic, which is particularly active against acid fast bacilli, including atypical and multidrug-resistant mycobacteria. It acts by inhibiting mycobacterial DNA transcription. Prolonged treatment with rifabutin and other macrolides such as clarithromycin or azithromycin (the RMAT regimen or rifabutin and macrolide antibiotic therapy) is effective in producing a marked improvement in this condition, and in a few cases almost total eradication of the disease.² Recent evidence suggests that *Mycobacterium avies* subspecies *paratuberculosis* may be associated with Crohn's disease.⁵ Rifabutin may be successfully used in Crohn's disease in a dose of 300 mg in the morning and 150 mg nocte.

Long-term rifabutin therapy in HIV infection has been associated with irreversible corneal endothelial deposits.^{1,3-5} In HIV infection in children, the dose for rifabutin prophylaxis for *M. avium* complex ranges from 5.0 to 15 mg per kg body weight per day. Walter *et al*⁶ described multiple stellate deposits on the corneal endothelium in patients with CMV retinitis. Specular microscopy showed polymegathism and reduced endothelial cell counts. Histological examination revealed macrophages and fibrin without lymphocytes, and it was suggested that the stellate deposits may reflect the inability to mount a normal T-cell-mediated response. Holland *et al*⁴ have suggested that there is an association between corneal endothelial deposits and duration of rifabutin therapy. Patients with corneal endothelial deposits had used rifabutin longer than those without the deposits. In one particular case of chronic

life-threatening osteomyelitis in a child due to *M. avium* complex, the deposits had progressively increased even after 2 years of termination of treatment with rifabutin.¹

Deposits on anterior lens surface¹ and retinal dysfunction in the form of abnormal electroretinographs¹ have also been reported. The retinal dysfunction may cause temporary reduction in vision, but is reversible on discontinuation of treatment. Acute anterior uveitis has also been reported in cases where the daily dosage of rifabutin approaches 1 g.⁵

We report a case of asymptomatic, bilaterally symmetrical yellowish brown corneal endothelial deposits in a young female following 3 years of rifabutin prophylaxis for Crohn's disease. The deposits showed no change in colour or intensity after discontinuation of the medication. The corneal endothelial deposits in our patient had a unique distribution in affecting the entire periphery without any involvement of the central cornea. This is in contrast to previously reported cases where the deposits involve the peripheral cornea initially but spread to the central cornea as well.

The high lipid solubility of rifabutin and its propensity to concentrate in tissues may contribute to the production of toxic ocular effects.³ The ring type endothelial appearance close to the limbus may suggest a possible underlying autoimmune response for their occurrence. However, local factors at corneal endothelial level such as pH, lipid solubility, ionic interaction, or protein binding affinity may also be relevant.³ Our patient with Crohn's disease had no other significant past medical or ocular history, supporting the theory that the deposits are related to the systemic toxicity of rifabutin.

Ocular side effects of rifabutin are largely asymptomatic and there is no indication to stop rifabutin therapy in Crohn's disease in such cases as the benefits far outweigh the adverse effects. However, prolonged ophthalmological and medical evaluation is required to determine the long-term effects of the drug. As the deposits are asymptomatic and not treatable and cause no visual problems, screening is currently not in practise. Although follow-up is only required for purposes of documentation and research, with evolving drug regimens monitoring the appearance of the corneal endothelial deposits may be useful until their clinical significance has been better understood.

Acknowledgements

The authors do not have any proprietary interest in any product mentioned.

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Eye (2006) **20**, 250–252. doi:10.1038/sj.eye.6701826;
published online 11 March 2005

Sir,
Management of band keratopathy with excimer phototherapeutic keratectomy

We read with interest the article by Stewart *et al* on 'Management of band keratopathy with excimer phototherapeutic keratectomy' [March 2003; **17**(2): 233–237]. The authors reviewed the results of phototherapeutic keratectomy (PTK) performed on eyes with calcific band keratopathy (CBK) and concluded that PTK was an effective procedure for the management of

CBK both for visual rehabilitation as well as ocular surface improvement.

We have recently published a study that looked at the effectiveness of EDTA chelation in CBK.¹ In the 65 eyes of 54 patients that we have followed after EDTA chelation, we found significant visual improvement of two or more lines in up to half of the eyes that were treated, as well as symptomatic relief in 98% of the patients. Stewart *et al* reported an improvement in visual acuity in 55% of the treated eyes as well as symptomatic improvement in 83% of their patients. Our results correlate well with those presented by Stewart *et al* using excimer PTK; however, without the disadvantage of causing significant myopic shift as well as the added costs and unavailability of the excimer laser, especially in rural areas and in developing countries. As the authors have suggested it in their article, future prospective studies are needed to compare both treatment modalities.

Until then, we do believe that EDTA chelation is a simple, inexpensive, and effective treatment for CBK and we recommend it as a first-line treatment for CBK.

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Eye (2006) **20**, 252. doi:10.1038/sj.eye.6701829;
published online 11 March 2005

Sir,
Use of OCT to demonstrate persistent subretinal fluid after clinically successful retinal detachment repair

The appropriate management of persistent shallow retinal detachment in individuals who have already