

facilitates its removal and replacement. Individuals who live for more prolonged intervals show a florid wound healing response at the scleral incision which makes removal difficult on repeat implantation procedures.

Cidofovir and HAART are known to control CMV retinitis.<sup>5,6</sup> Neither drug was available to us when treating this patient. The degree of intraocular inflammation may be increased when sustained-release implants are used in conjunction with HAART, which may restore some degree of immunocompetence. Further histological studies of implanted eyes are awaited in this new era of AIDS therapy.

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Sir,

#### Broken suture – predisposing factor for *Nocardia* keratitis

*Nocardia* keratitis is a rare but an interesting clinical entity. Trauma with organic matter is the usual predisposing factor.<sup>1</sup> Cases of keratitis caused by *Nocardia asteroides* associated with soft contact lens wear have been reported.<sup>2–4</sup> Cases of *Nocardia asteroides* keratitis that developed after laser *in situ* keratomileusis (LASIK) retreatment and myopic keratomileusis have been reported.<sup>5,6</sup> We report a case of *Nocardia* keratitis in which the infiltrate developed adjacent to a broken suture of cataract surgery.

#### Case report

A 65-year-old man presented to us on 10 July 1998 complaining of no improvement in vision in the right eye following cataract surgery that he had undergone on 30 April 1998. The visual acuity in the right eye was counting fingers at 1 m and in the left eye it was 6/60. He was on 0.1% dexamethasone sulphate eye drops every 3 hourly in the right eye. Examination revealed pseudophakia with intact interrupted 10–0 monofilament nylon sutures in the right eye and cataract in the left eye. The fundus could not be visualised because of hazy media in the right eye; and in the left eye, the fundus was normal. Ultrasound B-scan examination of the right eye revealed low-reflectivity spikes in the vitreous with retinal detachment nasally and inferiorly. The patient was continued on steroid eye drops 4 times a day and was posted for vitreoretinal surgery in the right eye. On the day of surgery in the right eye, the lids were oedematous. There was diffuse conjunctival congestion. There was one broken suture and a dense, full-thickness

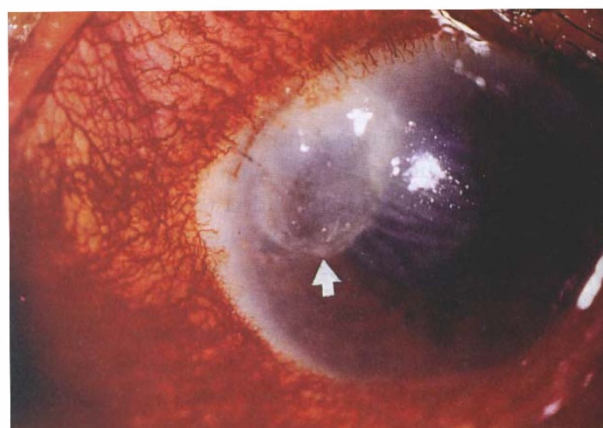
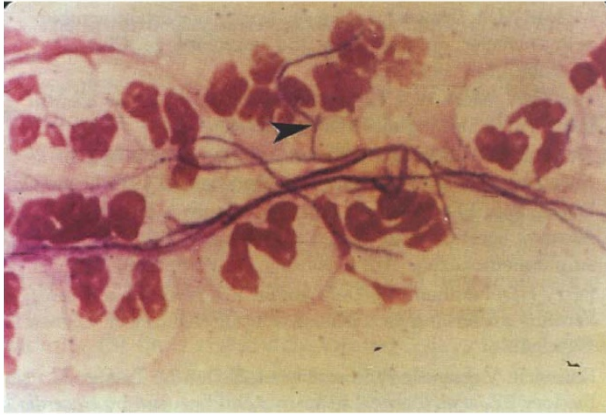


Fig. 1. Slit-lamp photograph showing infiltrate with beaded margins (arrow) adjacent to the site of the broken suture.



**Fig. 2.** Gram stain of corneal scraping showing Gram-positive beaded, branching filaments (arrowhead).

infiltrate adjacent to it which measured 4.4 mm × 3.2 mm with an overlying epithelial defect. The margins of the infiltrate were beaded (Fig. 1). The anterior chamber was deep with coagulum and trace hypopyon. The pupil was irregular and the intraocular lens was in place. The broken suture was removed.

Using standard techniques, corneal scrapings obtained by a sterile blade no. 15 on a Bard Parker handle were inoculated directly onto sheep blood agar, chocolate agar, non-nutrient agar, Sabouraud's dextrose agar, potato dextrose agar, thioglycollate broth and brain heart infusion broth. The Sabouraud's and potato dextrose agar plates were incubated at 25 °C to enhance the growth of fungi, and the remainder were incubated at 37 °C. While the blood agar plates were incubated under both aerobic and anaerobic conditions, the chocolate agar was incubated with 5% carbon dioxide and non-nutrient agar was incubated with an added *E. coli* suspension. Gram stain, Giemsa stain, and KOH with calcofluor white under fluorescence were included as part of the standard protocol for microscopic evaluation of corneal smears. While the latter two smears showed no organisms, Gram-positive, beaded, thin branching filaments (Fig. 2) were seen in Gram stain. The same smear was restained using Kinyoun's method (1% H<sub>2</sub>SO<sub>4</sub>)<sup>7</sup> which confirmed the filaments to be acid-fast, on the basis of which the diagnosis of *Nocardia* keratitis was

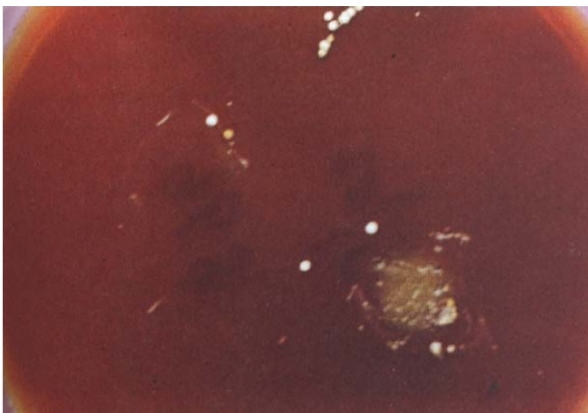
made. In an additional smear, stained by the Ziehl-Neelsen method (20% H<sub>2</sub>SO<sub>4</sub>), the filaments were not acid-fast. Confluent growth of dry, white, tiny colonies (Fig. 3) were noted on blood and chocolate agar after 48 h which were Gram-positive beaded filaments on Gram stain and resisted decolorisation by 1% H<sub>2</sub>SO<sub>4</sub>. Negative results with biochemical reactions such as hydrolysis of xanthine, casein and tyrosine, no growth in gelatin, and no urease production, identified the organism to be *Nocardia* species. The rest of the inoculated media remained sterile for 7 days. Antibiotic susceptibility was tested on blood agar using the Kirby-Bauer method and the organism was found to be sensitive to chloramphenicol, gentamicin and amikacin. It was resistant to cefazolin, ceftazidime, ciprofloxacin, norfloxacin, sulphamethizole, vancomycin and trimethoprim. Minimum inhibitory concentration (MIC) determined by agar-dilution method<sup>8</sup> confirmed the organism to be sensitive to amikacin (0.24 µg/ml) and gentamicin (3.12 µg/ml) but resistant to ciprofloxacin (8 µg/ml).

Prior to the antibiotic susceptibility report from the laboratory intensive topical antibiotic treatment with 0.3% ciprofloxacin eye drops every half-hourly and 30% sulphacetamide eye drops every half-hourly along with 1% atropine eye drops three times a day was initiated. The clinical picture was the same despite 7 days of intensive topical treatment. The treatment was therefore modified and fortified gentamicin (1.4%) eye drops were started every half-hourly. There was response to treatment the next day in the form of a decrease in the anterior chamber reaction, which later resolved completely forming a vascularised scar by the end of 3 weeks.

#### Comment

Trauma related to agricultural work is the usual predisposing factor to *Nocardia* keratitis.<sup>1</sup> Parsons *et al.*<sup>2</sup> and Enzenauer *et al.*<sup>3</sup> have reported cases of *Nocardia asteroides* keratitis associated with soft contact lens wear. Laser *in situ* keratomileusis (LASIK)<sup>5</sup> and myopic keratomileusis<sup>6</sup> have been reported as predisposing factors in isolated cases. Use of steroids may be considered as a possible predisposing factor compromising the ocular immunity that controls the infection.<sup>9</sup> In our earlier series of 16 cases,<sup>1</sup> there was a definite history of trauma in 4 patients. Three patients were on topical steroid medication at the time of presentation. In this case report, a broken suture and topical steroids were the predisposing factors for *Nocardia* keratitis. To the best of our knowledge, broken suture has not been reported as the predisposing factor for *Nocardia* keratitis.

This case also highlights the difficulty in management of *Nocardia* keratitis. Sulfonamides with or without trimethoprim have been the mainstay of antimicrobial therapy for nocardial infections. Antimicrobial agents that may be of clinical benefit include broad spectrum cephalosporins, fluoroquinolones, clindamycin,



**Fig. 3.** Culture of corneal scraping on blood agar showing small, dry, white colonies of *Nocardia*.

erythromycin, ampicillin, aminoglycosides (in particular, amikacin), tetracyclines (including minocycline) and imipenem.<sup>10</sup> Sulphacetamide eye drops is considered the standard treatment for *Nocardia* keratitis and isolated cases successfully treated with this drug have been reported.<sup>2,11,12</sup> Donnenfeld *et al.*<sup>13</sup> reported a case of *Nocardia* keratitis not responding to sulphacetamide therapy that was treated successfully with trimethoprim-sulfamethoxazole eye drops. Following this, cases of *Nocardia* keratitis successfully managed with trimethoprim-sulphamethoxazole have been reported.<sup>3,14,15</sup> Boiron *et al.*<sup>16</sup> recommended amikacin as the drug of choice in the therapy of all forms of nocardial infections. Denk *et al.*<sup>17</sup> reported a case successfully treated with topical amikacin and suggested that amikacin may be the drug of choice in *Nocardia* keratitis. The drug-sensitivity pattern of our previous series of 16 patients by Kirby-Bauer disc diffusion technique<sup>1</sup> revealed that all were sensitive to gentamicin. Eleven of 16 isolates were sensitive to chloramphenicol. Sensitivity to amikacin was tested only in 3 patients, and all three isolates were sensitive. In the present case, fortified gentamicin therapy was considered, on the basis of our earlier experience and owing to the fact that the *Nocardia* isolated was sensitive to gentamicin. Though our patient responded to gentamicin, it is important to realise that antibiotic susceptibility testing of *Nocardia* is technically difficult, time-consuming and *in vitro* results may not always be reliable predictors of clinical response.<sup>15</sup>

To conclude, broken suture may be a predisposing factor for *Nocardia* keratitis and gentamicin can be an alternative drug in the management of *Nocardia* keratitis.

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Sir,

## Isolated post-operative *Aspergillus niger* endophthalmitis

*Aspergillus* endophthalmitis is a rare fungal infection of the eye and has been linked to endogenous aetiologies in the disseminated form, most commonly due to an underlying immunocompromised state.<sup>1-3</sup>

The genus *Aspergillus* is the most common group of fungi in man's environment and manifests in an invasive, colonising or allergic manner.<sup>1-4</sup> Its morphology and culture characteristics allow easy identification<sup>2</sup> and it is interesting to note that the present case report is probably the first recorded incidence of *Aspergillus niger* endophthalmitis in the UK.

## Case report

A 63-year-old healthy Caucasian woman presented to this eye clinic 1 month after an uneventful left eye phacoemulsification and intraocular lens implantation with symptoms of pain, photophobia, watering and blurring of vision. On examination, visual acuity was 6/36 on presentation deteriorating to perception of light over the next few days.