Case Report

Nocardia keratitis : A case report

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Abstract

Infective keratitis can on occasion end up in diagnostic difficulty. This is more so if the patient is on immunosuppressants as it can alter the clinical presentation. We report a case of a 39 year old patient who underwent renal transplantation in 2007, and is currently on immunosuppressants. She presented with a painful red eye and had features of marginal keratitis. There was a poor response to empirical antibiotic therapy. Due to the prolonged disease process and infiltration of the cornea, she had an imminent perforation. Surgical intervention and appropriate antibiotic therapy following identification of the causative organism as *Nocardia spp.* resulted in full recovery. Although there are a few case reports of *Nocardia* keratitis in immuno-compromised patients in the international literature, this appears to be the first documented case reported in Sri Lanka.

Introduction

The management of infective keratitis is challenging. Difficulties may be encountered if the infective agent shows poor response to the anti-microbial agent or if the diagnosis is delayed.

Case report

A 39 year old school teacher had a renal transplantation done in 2007 and since then had been on immunosuppressants. She underwent uncomplicated cataract surgery in her left eye in May 2012. Two months later, she presented with pain in the same eye and reduced vision (6/9). Examination confirmed blepharitis and an infiltration in the inferior cornea and moxifloxacin eye drops were started empirically.

Eye scrapings yielded coagulase negative *Staphylococcus* spp.. With the presence of blepharitis, a diagnosis of marginal keratitis was made and topical dexamethazone commenced. No clinical improvement was noted in the next 2 weeks. The infiltration worsened with the formation of a stromal abscess. Culture samples from the abscess did not yield a causative organism. As stromal thinning continued with the risk of perforation, a Gunderson conjuctival flap grafting was performed. Fresh scrapings were taken at the time of the graft. This sample was directly inoculated at the theater itself onto Blood agar,

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MacConkey agar and Sabarouds Dextrose agar. No organisms were seen in the direct smear. There was no growth on Blood and MacConkey plates after overnight incubation and plates were re-incubated for another 18 hours. The next day, a pure growth on the Blood agar plate was noted. Colonies were chalky white in colour with a rough dry surface and there was a cerebriform appearance (Figure 1).

Figure 1: Colony appearance on blood agar plate (aerobic)

Gram stain showed Gram positive bacilli with branching filaments (Figure 2). The organism was acid fast using the Modified Kinyon stain (Figure 3). There was no growth under anaerobic conditions. The isolate was identified as *Nocardia* species but no facilities were available for further identification.

As therapy, fortified amikacin and ciprofloxacin eye drops with co-trimoxazole tablets were commenced. There was a dramatic improvement in the clinical condition of the patient and the infiltration rapidly diminished. The graft was well taken and vision returned to 6/6-. Oral co-trimoxazole, topical ciprofloxacin and fortified amikacin were continued for a further 4 weeks.

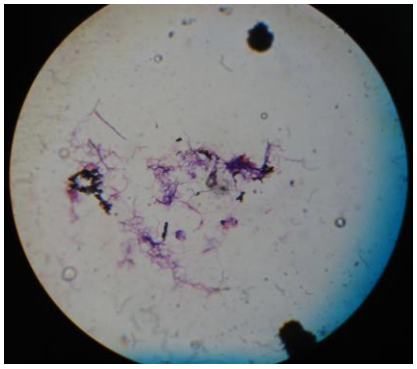

Figure 2: Gram stain appearance (oil immersion x1000) .

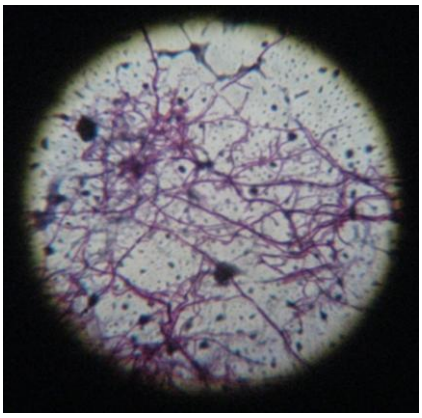

Figure 3: Modified Kinyon staining

Discussion

Over the last few decades there have been a number of sporadic cases reported with *Nocardia* keratitis, but there is no previously published evidence of a similar case in Sri Lanka. Of the published cases, some followed ocular surgery while most followed ocular trauma. The superficial one third of the cornea may be affected and result in confluent lesions. When occurring in the inferior cornea, they mimic marginal keratitis. In an immunosuppressed patient, the lesions may penetrate deeper and progress to perforation as in this patient.

The Gunderson flap possibly saved this patient from developing a corneal perforation. The flap is harvested from the adjacent conjuctival and Tenon tissue. It is brought over the diseased cornea and sutured. The flap strengthens the cornea and provides higher antibiotic concentrations to the wound, but leaves a scar even if it is taken off later. Following the microscopic and culture evidence of *Nocardia* infection, amikacin, ciprofloxacin and co-trimoxazole was commenced, based on previously reported case reports[1,2] and the patient recovered leaving only a superficial scar.

Nocardia and *Actinomyces* are members of the family Actinomycetaceae. Both genera grow as fragile branching filaments that readily fragment into rods. Their Gram stain appearance is similar but *Nocardia* are aerobic and acid fast, whereas *Actinomyces* are anaerobic and non

acid fast. *Nocardia* infections are rare, especially in the eye. Typically it causes pulmonary infection and mycetoma but in immune-compromised persons it may cause severe and disseminated infection. It is therefore considered as an opportunistic pathogen.[3] There are a number of case reports describing *Nocardia* keratitis after phacoemulsification and other ophthalmological procedures. Some of these are linked to contaminated equipment.[4,5] Trauma is a well-recognized predisposing factor for *Nocardia* eye infection[6,7] but there was no previous history of eye trauma in this patient apart from surgery. Systemic immunosuppression was used in this patient for her renal condition which was the main identifiable risk factor. The culture yielded growth only after 48 hours of incubation and this causative organism would have been missed if culture plates were incubated for the routine incubation period of 18-24 hours. This highlights the importance of providing adequate clinical details to the laboratory so that procedures could be adapted to facilitate isolation of rare organisms such as *Nocardia*.

Conflicts of Interest : None

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