



POST KERATOPLASTY KERATITIS WITH PANDRUG RESISTANT *PSEUDOMONAS* SPP. SHOWING FALSE SUSCEPTIBILITY TO CARBAPENEMS

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ABSTRACT

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Pandrug resistant *Pseudomonas* keratitis is an emerging cause of bacterial keratitis challenging clinicians for prompt and prudent treatment to avoid disaster of loss of eye. We report two cases of pandrug resistant keratitis following penetrating keratitis caused by *Pseudomonas* spp. It was only after a detailed laboratory characterization of the isolates that revealed their pandrug resistant character and helped in successful management of the condition.

Key words: Multidrug resistant; *Pseudomonas*; Keratitis; Carbapenem.

*“Detailed characterization
of isolates is essential to
address the emergence of
pandrug resistant
Pseudomonas aeruginosa
in postkeratoplasty
keratitis”*

INTRODUCTION

Post keratoplasty graft infection due to *Pseudomonas* infection is an emergency to prevent loss of the eye because of ulcerative keratitis.¹ In this context, pandrug resistant *Pseudomonas aeruginosa* is emerging as an important etiology.² We report two cases of pandrug resistant *Pseudomonas* keratitis in period of two years successfully managed at a tertiary care hospital, India, thus highlighting the trends in increasing drug resistance and importance of laboratory investigations for proper management.

CASE REPORT

A 30 year old male with corneal dystrophy, presented with finger counting vision in his right eye. He had undergone an uneventful penetrating keratoplasty in his left eye a year back and gained 6/9 vision. Following keratoplasty, the patient developed pain, watery discharge and diminution of vision in the concerned eye on the first day. Slit lamp examination revealed a large (3x3mm) suppurative area involving the limbus in the superior aspect of cornea and sutures along with hyphaema and multiple descemet's fold as shown in Fig 1a. Corneal scraping was sent for microbiological investigation and patient was given fortified vancomycin and amikacin eye drop along with atropine empirically.

Gram stain from the corneal scrape showed numerous Gram negative bacilli and pus cells. It cultured a mucoid, nonpigmented *Pseudomonas* strain, confirmed by nested PCR targeting the anthranilate synthetase component I, with susceptibility only to imipenem and polymyxin B, by the disc diffusion method.³ Based on the report, fortified imipenem (5µg/ml) was instilled half hourly in the infected eye, but without any signs of improvement. Polymyxin B (7500IU/ml) was added and patient showed signs of improvement with reduction in size of infiltrate. Finally complete infection control was achieved by the tenth postoperative day as shown in fig 1b and the patient had a best corrected visual acuity of 6/24. In the laboratory, minimum inhibitory concentrations (MICs) of imipenem and meropenem³ were seen to be >32mg/L, corroborating that the isolate was actually resistant to carbapenems. MIC values for

ciprofloxacin(>8mg/L), gentamicin (>32mg/L), piperacillin (>1024mg/L), ceftazidime (>64mg/L) confirmed the resistance profile. Phenotypical screening of the isolate revealed the presence of metallo-β-lactamase gene.⁴ In the second case, a 65 years old female with complaints of diminished vision visited the hospital services. On examination, a diagnosis of pseudophakic bullous keratopathy was made followed by a planned keratoplasty. On the same evening, the patient developed pain and watery discharge in the operated eye. Slit lamp examination revealed suppurative lesion on the superior quadrant. Microbiological investigations were similar other than the MIC value of the isolate which was <16mg/l. Due to our previous experience, topical polymyxin B was administered but without any appreciable improvement. Finally, the patient somewhat responded to addition of imipenem to the above regime initially. However, severity of the infection increased without any further response to treatment. Finally, evisceration of the concerned eye had to be performed.

DISCUSSION

Incidence of microbial keratitis following penetrating keratoplasty varies from 1.8% to 11.9%.⁵ The previous opinion of using fluoroquinolones and aminoglycosides for treatment of pseudomonas keratitis has changed radically.⁶ Because iatrogenic etiology is one of the common sources of keratitis, a thorough surveillance of the concerned operation theatre was done. In addition, practice of routine donor scleral rim culture was suggested. With emergence of drug resistance, it becomes very difficult to predict a general trend in susceptibility patterns of the isolates. General awareness and a high index of suspicion are required for prompt management of such cases. To meet the therapeutic challenge of bacterial keratitis, periodic epidemiological trends and drug resistance surveillance must be done. However, the concern is that with the dearth of newer antibiotics, these last resort drugs can only afford a temporary relief.

Considering the trend of increasing antibiotic resistance in *Pseudomonas* spp, routine susceptibility testing might show false susceptibility leading to

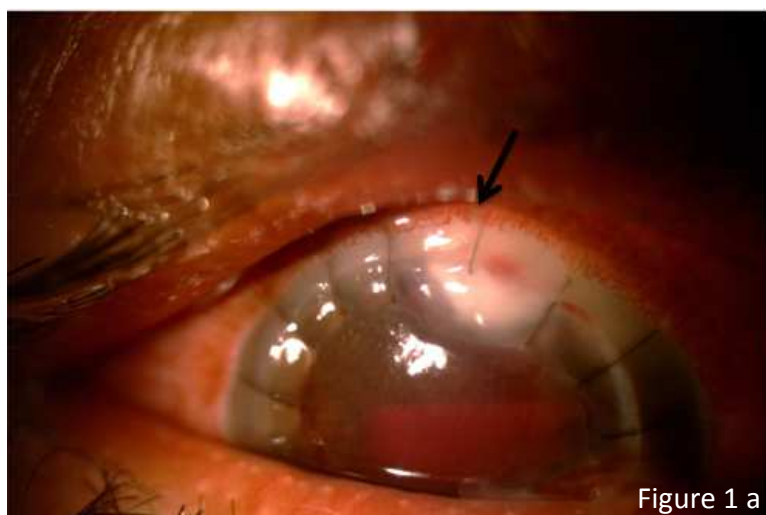


Figure 1 a

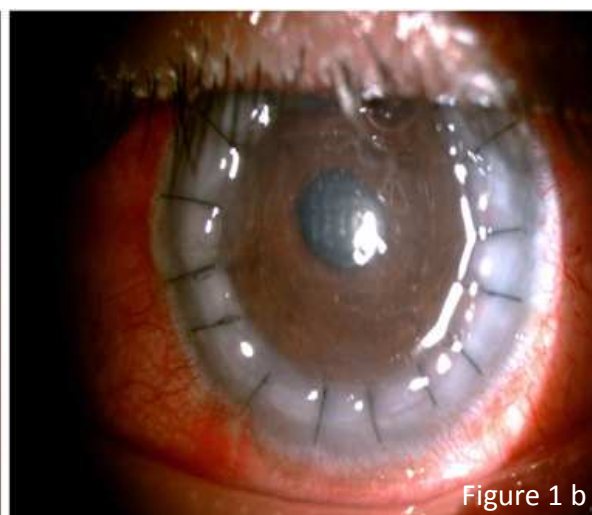


Figure 1 b

Figure 1a and 1b showing the post keratoplasty infection site and response to treatment

treatment failure. A detailed characterization of the isolates may help to improve patient outcome.

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Authors Contributions:

MKG, TB and AC helped in sample collection, laboratory work up and initial drafting of the manuscript.

SKP and GN helped in molecular confirmation of the strains

RT supervised the study and helped in final preparation of the manuscript.

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