Pseudomonas aeruginosa blepharitis in a patient with vancomycin induced neutropenia

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Bacteria are the principal pathogens responsible for most infections of the eyelids, with skin flora organisms such as Staphylococcus or Streptococcus species being the most common cause (1,2). We present a patient who developed pseudomonal blepharitis during an episode of drug induced neutropenia.

CASE PRESENTATION

A 62-year-old male was admitted to his local hospital on July 26, 1991 for management of exfoliative dermatitis. In hospital the dermatitis was managed with oral prednisone 40 mg daily, which was tapered to 20 mg over three weeks. On August 19 the patient was started on vancomycin 1 g intravenously every 12 h because of fever and a blood culture positive for Staphylococcus epidermidis. White blood cell count at that time was 10x10^9/L (7.9x10^9/L neutrophils). Nine days later a repeat blood culture again grew S epidermidis and the patient remained febrile despite vancomycin therapy.

On August 28 he was transferred to Victoria Hospital for management of suspected infection unresponsive to therapy. On examination, vital signs were stable, temperature was 38.7°C and there was generalized exfoliation of the skin with...
mineral mucositis. Vancomycin was discontinued because differing antibiotic sensitivity patterns of the blood culture isolates suggested these were contaminants and there was no other obvious focus of infection. It was felt that the patient's fever was most likely explained by the exfoliative dermatitis. The total leukocyte count on admission was $2.8 \times 10^9/L$ ($0.3 \times 10^9/L$ neutrophils).

On August 30 topical gentamicin was started for a red-den ed left eye. The following day bilateral blepharitis was noted and systemic cloxacillin therapy started. By September 1 the leukocyte count had fallen to $1.7 \times 10^9/L$ ($0.1 \times 10^9/L$ neutrophils) and marked progression of the blepharitis had occurred. The eyelids were swollen and draining purulent discharge with numerous microabscesses present in the meibomian glands of the upper and lower lids. Results of culture of both eyelids showed a light growth of Pseudomonas aerugi-nosa, sensitive to gentamicin, tobramycin, piperacillin, cef-tazidime and ciprofloxacin.

Cloxacillin therapy was discontinued and a 10-day course of parenteral piperacillin and tobramycin was administered, followed by seven days of oral ciprofloxacin. After 48 h of parenteral therapy, soft tissue swelling on both lids had decreased and no further abscesses appeared. On September 4 several black necrotic areas were noted at the lid margins. Despite a good response to systemic antibiotic therapy and resolution of the neutropenia the patient was left with extensive scarring and tissue loss of both eyelids, which subsequently required reconstructive surgery (Figure 1).

**DISCUSSION**

Exfoliative dermatitis may be associated with fever (3) and with an increased risk of cellulitis and sepsis. The interpretation of an elevated temperature in such a patient can be difficult. We believe this patient's initial fever was likely due to his exfoliative dermatitis. However, at the time it was judged that he was septicemic with a coagulase-negative staphylococcus, and vancomycin treatment was commenced. Therapy with vancomycin is reported to cause neutropenia, defined as a polymorphonuclear count of less than $1 \times 10^9/L$ in up to 2% of patients (4). On admission to our hospital, nine days after commencing vancomycin therapy, the patient had a total white cell count of $3 \times 10^9/L$ and almost no neutrophils. His blepharitis was initially noted on the fifth day of neutropenia.

Blepharoconjunctivitis is commonly observed in individuals who suffer from dry skin or seborrheic dermatitis. Secondary bacterial infection often occurs, usually due to skin flora pathogens such as S aureus or Streptococcus species (2). Our patient's infection was due to P aeruginosa, a well recognized pathogen in the neutropenic host (5), but rarely implicated as a cause of blepharitis (6). A MEDLINE search of the English-language literature revealed only five case reports of blepharitis due to P aeruginosa (2,7-10). As with our case, four of the five patients discussed in these reports had concurrent leukopenia and/or neutropenia. The fifth patient was believed to have been infected iatrogenically via contaminated shampoo that was being applied to the eyelids for prevention of recurrent blepharoconjunctivitis (2). In the majority of the reported cases the infection progressed rapidly over a period of 24 h. Eyelid erythema, swelling and purulent discharge were common presenting signs (2,7,8,10). Subsequent acute necrosis of lid margin(s) and tissue loss occurred in all patients with neutropenia (7-10). Interestingly, the lesions in our patient, and those described previously, resembled ecthyma gangrenosum, a lesion classically associated with P aeruginosa infections complicating neutropenia (5,7). In the case of a 40-day-old infant with pancytopenia, the necrotizing pseudomonas infection resulted in the destruction of the whole lid apparatus, lacrimal system and corneal perforation due to exposure keratitis (9).

Disruption of the skin barrier due to exfoliative dermatitis and steroid therapy (11,12) used to manage the dermatitis were both likely contributory to the development of infection in our patient. However, we feel that the concomitant drug-induced neutropenia was the critical factor. Although our patient's neutrophil count recovered within several days of discontinuing vancomycin therapy and he survived Gram-negative infection, radical reconstructive surgery of his eyelids was required.

Clinicians should be aware that in the presence of predisposing risk factors a common infection such as blepharitis can be caused by infrequently implicated bacteria. The rapid progression of pseudomonal blepharitis and the potential for extensive tissue loss support the need for heightened awareness.

**REFERENCES**


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Figure 1) Patient following resolution of neutropenia and Pseudomonas aeruginosa infection. Partial destruction of tarsal plate can be seen.


