Pseudomonas aeruginosa ocular infections in burns: A case study

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Case
A 25 year-old male with a total body surface area of 63 percent burns was transferred to Royal North Shore Hospital Severe Burn Injury Unit. The patient was found outside a burning house and the circumstances of the fire is unknown. After initial rapid assessment and resuscitation, he was taken to theatres for debridement and application of Biobrane®. On hospital day 3, the ophthalmologist examined his eyes and both corneas were clear with no epithelial defects. He had low-grade temperatures and cultures from both blood and sputum were positive for P. aeruginosa. On hospital day 7, bilateral eyes had a 90 percent epithelial defect with a dense stromal opacity and corneal scrapings cultured P. aeruginosa, hence the diagnosis of bacterial keratitis. Due to the high risk of globe perforation and slow resolution of ring infiltrates and epithelial defects, the initial prognosis of his vision was poor. Although the vitreous fluid cultures were negative, he was treated very aggressively with topical and intra-vitreous antibiotics. On discharge, he had corneal scarring of 50 percent of the corneal surface and visual acuity was pinhole 6/18 in both eyes. Six months after discharge, his visual acuity improved to pinhole 6/12.

Discussion
P. aeruginosa skin infections complicating burn injuries are associated with a very high mortality rate, with reports of up to 70 percent if bacteraemia is present. P. aeruginosa can colonise at the burn eschar site and patients on mechanical ventilation are at an increased risk of the organism inoculating the eyes due to tracheal suctioning or when ventilation tubes are being disconnected. Ocular infections, such as bacterial keratitis, require prompt clinical evaluation and initiation of topical antimicrobials as the patient is at risk of irreversible vision loss due to ulceration, necrosis and scarring. If the disfigurement of burns was to be complicated with significant visual loss, then this would be devastating for the future management of the patient and the limitation on functional movement would dramatically increase. Therefore with this belief, although the initial prognosis was poor and he was expected to be legally blind, the patient was still treated very aggressively leading to a much more favourable outcome.

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