Keratitis

Suppurative keratitis

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Local data are required to provide the evidence to formulate local guidelines

The cornea has natural defences that must be breached before an infection can occur. If the cornea is damaged by disease or injury the flora of the ocular surface and the environment in which the person lives influence the type of infections that develop. Ambient temperature and humidity have a major role in determining the micro-organisms found in the environment. It is therefore to be expected that the pathogens isolated from cases of suppurative keratitis will vary among geographic locations according to the local climate and occupational risk factors.

In the *BJO* Leck *et al* reported differences in isolates from patients with suppurative keratitis from Ghana and southern India, both of which are at similar tropical latitudes.[1] In contrast with temperate regions, the principal organisms identified in both the centres were filamentous fungi, especially *Aspergillus* spp and *Fusarium* spp, but there were also differences in the bacterial isolates, with *Pseudomonas* spp the most frequent isolate from Ghana and *Streptococcus* spp the most common isolate from southern India. Importantly, they have shown that a diagnosis of fungal keratitis can almost always be confirmed by microscopy of a corneal scrape, which is a simple and widely available laboratory technique. Because of the difficulty in treating filamentary fungal keratitis, a further conclusion from this study could be that a significant proportion of cases of suppurative keratitis seen in developing regions cannot be treated effectively, with the resultant implications for visual loss. There is clearly a need for a widely available potent topical antifungal agent. Finally, regional differences in the microbial causes of suppurative keratitis mean that treatment guidelines developed locally will not be universally applicable.

In addition to regional differences, longitudinal studies have demonstrated that the causes of suppurative keratitis can change over relatively short periods of time.[2 3] This is probably the result of changes in risk factors for infection. For example, contact lens wear is the primary risk for acanthamoeba keratitis in developed countries,[4] whereas in developing countries it is more usually associated with injury.[5] Such a difference may become less apparent if an increased use of contact lenses and an improved domestic water supply follow urbanisation. Contact lens wear also modifies the pattern of bacterial keratitis dramatically, increasing the proportion of cases of Gram negative isolates. Data on the local causes of suppurative keratitis can therefore become dated, and a periodic review of treatment protocols is necessary.

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The initial management of suppurative keratitis should treat the most likely cause, based on local experience. In primary care, the need to collect samples for culture before treatment is started has been questioned for reasons of cost containment and because in vitro sensitivity may not reflect the clinical response.[6 7] This approach relies on the availability of a broad spectrum antimicrobial, but if there is no response, it introduces a delay while cultures are obtained to guide further treatment decisions. If cultures are not taken the opportunity to develop a local database of the causes of infection is also missed. Unfortunately, the widespread and inappropriate use of broad spectrum antibiotics has resulted in significant rates of resistance to fluoroquinolones and aminoglycosides in isolates from bacterial keratitis from the United States and India.[3 8–10] This problem is not universal and fluoroquinolone resistance in ocular isolates is not yet a major problem in the United Kingdom.[2] However, continued surveillance is necessary because the rates of resistance to current antibiotics will almost certainly increase.

Although trachoma and xerophthalmia are the leading causes of corneal blindness worldwide, suppurative keratitis is a major cause of preventable monocular blindness.[11] Educational strategies can reduce avoidable risk such as trauma, but treatment protocols are required to manage established disease. The data presented by Leck *et al* confirm that a treatment protocol may not be applicable across geographic borders, and local data are required to provide the evidence to formulate local guidelines. Surveillance programmes conducted in representative regional centres are required to establish the profile of isolates from local cases of suppurative keratitis, determine their sensitivity to treatment, and monitor for changes over time. The methods used to assess in vitro sensitivity, typically the Kirby Bauer test for bacteria, need to be modified to take into account the tissue concentration achievable with topical use and thus provide a clinically relevant definition of resistance in relation to corneal infection.[12 13] Adoption of standardised methods would permit meaningful comparisons of antibiotic resistance rates between centres.

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