by vascularisation. It is particularly useful in patients with impending perforation, when it may preserve the globe and allow subsequent corneal grafting. However, a flap may limit the penetration of topical antibiotics, so it should only be performed once the ulcer has been sterilised and the infection brought under control.

Conclusion

Management of microbial keratitis remains a major challenge worldwide, more so in low- and middle-income countries with inadequate health care resources. Although the outcome of treatment has improved significantly, many patients continue to deteriorate in spite of the best treatment that can be offered. The continued emergence of strains of microorganisms that are resistant to an ever-expanding range of antimicrobials poses an additional challenge. Further research related to prevention of microbial keratitis and enhancing host resistance are two worthwhile goals to pursue. Large-scale public education programmes to alert those at risk of microbial keratitis, and to encourage earlier presentation, should be undertaken. Coupled with this, education of practitioners, general physicians, and other health workers, as well as general ophthalmologists, will go a long way towards ensuring correct diagnosis, appropriate treatment and timely referral before extensive damage to the cornea occurs. Several studies have indicated that the best way to prevent corneal ulcers in low- and middle-income countries is to treat corneal abrasions in the primary care setting within 48 hours of the injury.[3-6] This could be adopted in any population and is cost-effective for both health providers and the patient.

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Distinguishing fungal and

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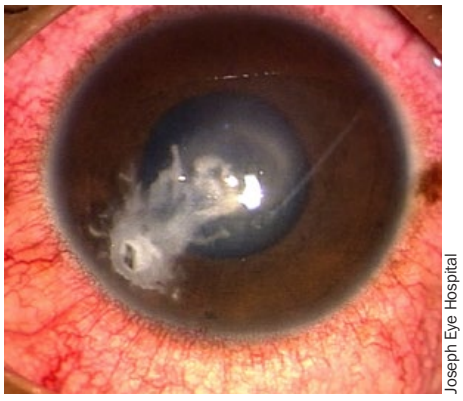
In many settings, laboratory support for the diagnosis of the type of microbial keratitis is not available. Experienced ophthalmologists have long maintained that it is sometimes possible to distinguish fungal from bacterial microbial keratitis on the basis of clinical signs. Formal data to support this view are limited, and it is important to establish the validity of such claims to understand whether signs can reliably guide clinical decisions. In addition, antifungal treatment is often in limited supply and prohibitively expensive. Therefore, it is not feasible or desirable to prescribe empirical antifungal therapy to every patient who presents with microbial keratitis in tropical regions, where fungal infections are more frequent. Here we review research to determine whether it is possible to reliably distinguish bacterial and fungal infection clinical features alone.

'It is not feasible or desirable to prescribe empirical antifungal therapy to every patient who presents with microbial keratitis in tropical regions, where fungal infections are more frequent.'

In a large series from India and Ghana, cases of microbial keratitis were systematically examined for specific features.[1] These included: serrated infiltrate margins, raised slough, dry texture, satellite lesions, hypopyon, anterior chamber fibrin, and colour. Serrated infiltrate margins and raised slough (surface

Figure 1. Examples key clinical features

(a) Serrated margin



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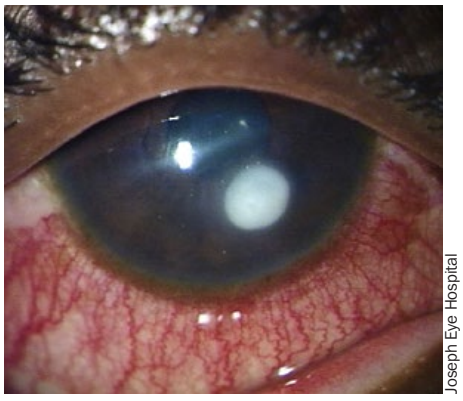
(b) Defined margin



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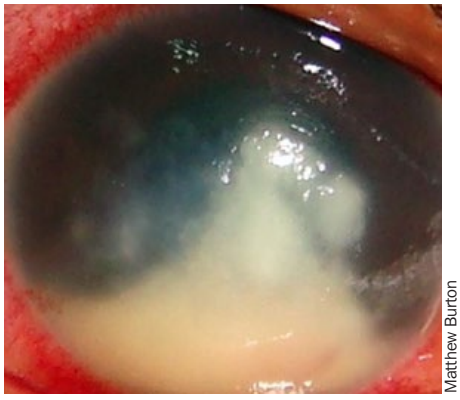
(c) Raised profile



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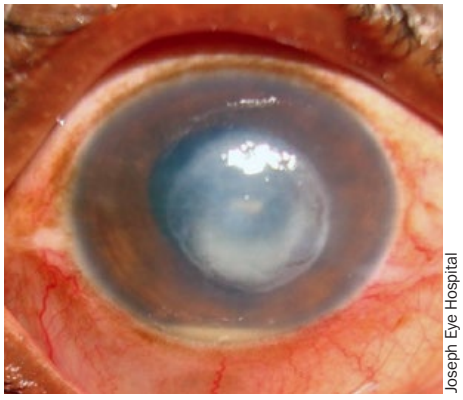
(d) Flat profile



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bacterial keratitis on clinical signs

profile) were independently associated with fungal keratitis, and the anterior chamber fibrin was independently associated with bacterial keratitis.[1] Some of these features are illustrated in Figure 1. By combining information about all three features in an algorithm (Figure 2), it is possible to obtain a probability score for the likelihood that the microbial keratitis case is due to a fungus.

Challenge: Use the algorithm (Figure 2) to estimate the probability that the microbial keratitis case in Figure 3 is due to a fungal infection. The algorithm is primarily for use as a guide in settings where clinicians do not have any laboratory facilities and treatment decisions have to be made based on clinical judgement alone. Where diagnostic microbiology is available it is strongly recommended that it is used. As discussed in the article on laboratory diagnosis in this issue, microscopy alone can provide a diagnosis if an infection is fungal; the presence of fungal hyphae in corneal tissue is a definitive diagnosis.

Figure 2. Algorithm for determining the probability of fungal keratitis. The black diamonds are decision points about three clinical features: ulcer / infiltrate margin, surface profile, and anterior chamber fibrin. These probabilities are based on data presented in Thomas et al.[1]

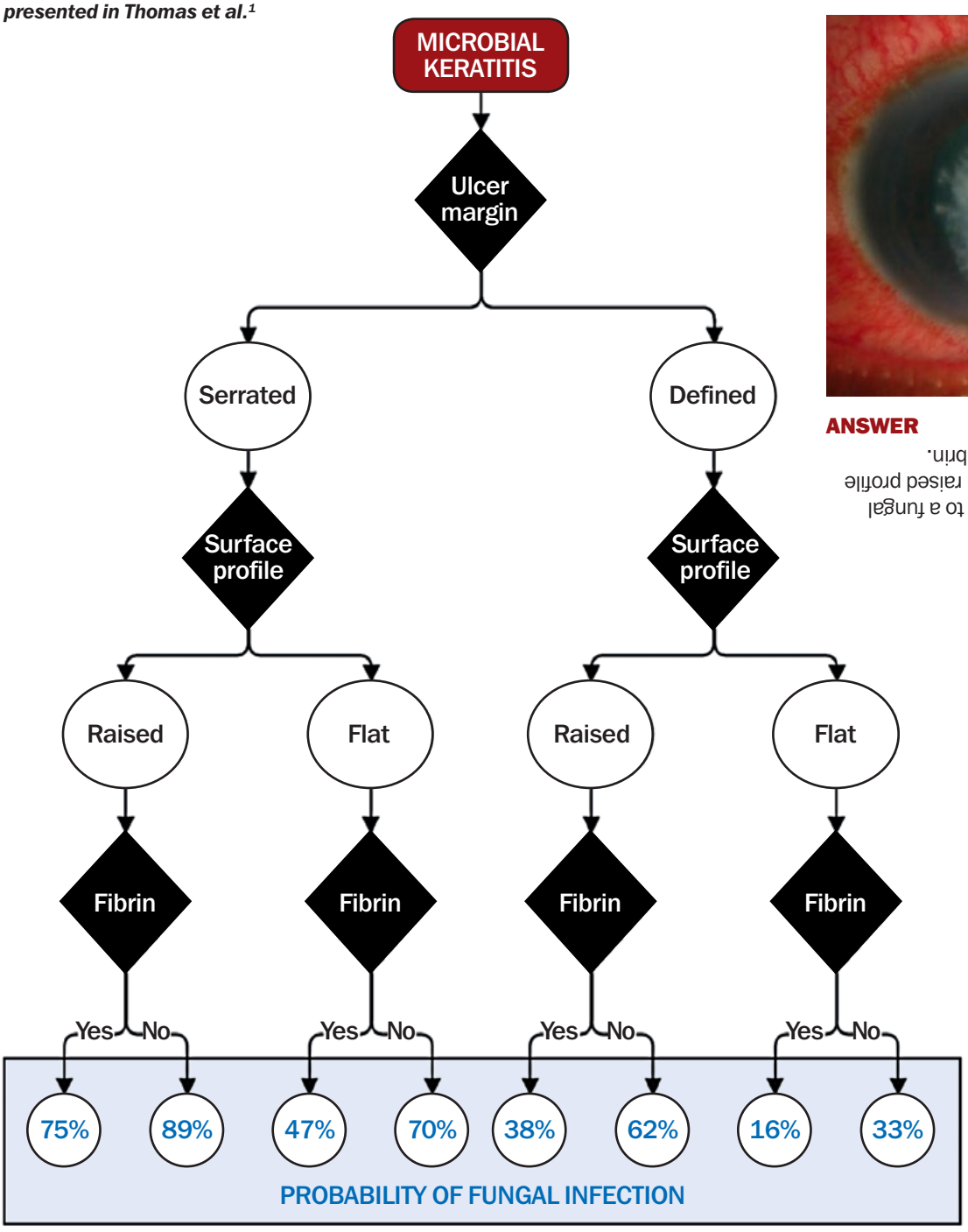
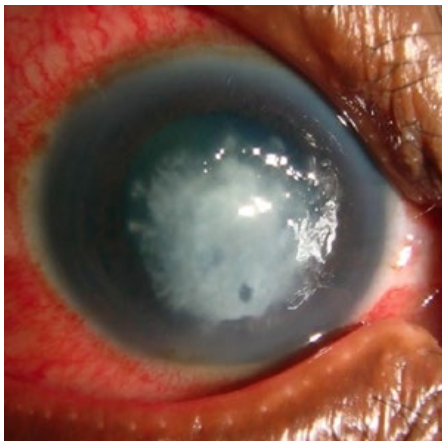


Figure 3. Use the algorithm (Figure 2) to estimate the probability that the keratitis is due to a fungal infection



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ANSWER

89% probability this is due to a fungal infection: serrated margin, raised profile and no anterior chamber fibrin.

Reference

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