Published in final edited form as:

Br J Ophthalmol. 2011 November ; 95(11): . doi:10.1136/bjophthalmol-2011-300270.

Pre-existing blindness in a cohort of patients with bacterial keratitis

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INTRODUCTION

Microbial keratitis is an important cause of visual loss worldwide, although the resulting blindness is generally assumed to be monocular.¹² Vision loss secondary to microbial keratitis will have a greater impact in patients with concurrent poor vision in the fellow eye. In this report, we analyse the prevalence of pre-existing blindness in patients screened for the NIH-sponsored Steroids for Corneal Ulcers Trial (SCUT, clinicaltrials.gov NCT00324168), (unpublished data) the degree of vision loss and the cause of blindness in the fellow eye.

METHODS

All patients with culture-positive bacterial corneal ulcers at the Aravind Eye Care System (Madurai, Coimbatore and Tirunelveli), Dartmouth Medical School and the F.I. Proctor Foundation, University of California San Francisco, between September 2006 and February 2010 were included. Patients excluded for poor vision in their other eye were identified from the SCUT database. Case review was performed for all available charts meeting this exclusion criterion. Descriptive statistics were performed using Stata 10.0. Ethical approval

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Contributors CEO designed the study and data collection tools, cleaned, analysed and interpreted data, drafted and revised the manuscript. AS helped to design data collection tools, collected data, interpreted, drafted and revised the manuscript. MS designed data collection tools, collected data, oversaw data collection for the entire study and revised the manuscript. CMT-K designed data collection tools, collected data and revised the manuscript. JM collected data and revised the manuscript. MR collected data and revised the manuscript. RR collected data and revised the manuscript. EJE collected, analysed and interpreted data and revised the manuscript. JDC helped to design study, collected data and revised the manuscript. NRA helped to design study and data collection tools, analysed and interpreted data and revised the manuscript. TML helped to design study and data collection tools, collected data, analysed and interpreted data and revised the manuscript. MEZ designed study and data collection tools, collected data, analysed and interpreted data and drafted and revised the manuscript.

Competing interests None.

Ethics approval This study was conducted with the approval of the ethics committees of University of California San Francisco, Dartmouth Medical School and Aravind Eye Care System.

Provenance and peer review Not commissioned; internally peer reviewed.

was granted by the University of California San Francisco, Dartmouth Medical School and Aravind Eye Hospital.

RESULTS

Of 1769 patients screened for the trial, 119 were excluded due to vision worse than 6/60 in their fellow eye (6.7%), 112 of whom (94%) were from India. Charts were available for 78 (65%) patients. Of these, 56 (72%) had pre-existing unilateral blindness in the eye without the current ulcer. The remainder had pre-existing bilateral blindness. Median age was 64 years (IQR 56–70 years), and 50 (64%) patients were men. Of 46 patients for whom geographical data were available, 37 (80%) lived in a rural setting. Median visual acuity in the fellow eye was logMAR 1.9 (light perception, IQR logMAR 1.7 (count fingers) to 2.0 (no light perception), table 1). Median visual acuity in the eye with a current corneal ulcer was logMAR 1.7 (count fingers, IQR logMAR 0.8 (6/40) to 1.8 (count fingers)). The most common cause of pre-existing loss of vision in the fellow eye was corneal opacity (table 1).

COMMENT

The prevalence of unilateral blindness has been estimated to be approximately 1–2% in developing countries.^{2–4} Reasons for unilateral blindness commonly include cataract and corneal scar.⁵ In this study, we found a prevalence of pre-existing blindness in the eye without the presenting ulcer of 6.7%, most of which was unilateral. The primary cause of vision loss was corneal opacity, and the degree of vision loss was severe. Patients who had a previous corneal injury or infection may be more at risk for a subsequent similar event because of occupation or access to care. For most of these patients, there is little potential for recovery of vision. The median age of patients excluded due to blindness in the fellow eye was higher than those included in the SCUT study, and a higher proportion of patients were men (unpublished data). Older male patients may be at increased risk for bilateral blindness secondary to keratitis.

The absence of data from 35% of the cases identified as having poor visual acuity in the unaffected eye may bias our estimates of the severity and cause of vision loss. Despite these limitations, these data suggest that corneal ulceration may result in more bilateral blindness than previously thought. We conservatively defined poor vision in the fellow eye as worse than 6/60 in this study; a less stringent definition would increase our estimates of patients with fellow eye visual impairment, as well as the potential impact of monocular visual loss associated bacterial keratitis. Further study of corneal ulceration in patients with pre-existing blindness is warranted and prevention of corneal ulceration and effective early treatment is especially important.

Acknowledgments

Funding None of the authors have any financial disclosures related to this manuscript. Funding for the trial was from the National Eye Institute, U10 EY015114 (TML). NRA is supported by a National Eye Institute K23 EY017897 grant and a Research to Prevent Blindness Award. The Department of Ophthalmology at UCSF is supported by a core grant from the National Eye Institute, EY02162. The sponsors did not have a role in the design and conduct of the study; collection, management, analysis and interpretation of the data; and preparation, review or approval of the manuscript.

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Table 1

Visual acuity at presentation and primary cause of vision loss in the non-infected eye of 78 patients with unilateral corneal ulcer and poor vision in the non-infected eye

Cause of vision loss	N (%)	Visual acuity, logMAR (median, IQR)
Corneal opacity	30 (38%)	1.85 (1.5–2.0)
Cataract	14 (18%)	1.75 (1.7–1.9)
Retinal disease	5 (7%)	1.7 (1.1–1.9)
Glaucoma	4 (5%)	1.85 (1.8–1.95)
Enucleation	5 (6%)	2.0 (2.0–2.0)
Endophthalmitis	1 (1%)	NA [*]
Other [†]	15 (19%)	2.0 (1.7–2.0)
Total	78	1.9 (1.7–2.0)

^{*} Acuity not available.

[†] Includes phthisis bulbi of unknown cause, failed previous penetrating keratoplasty and bullous keratopathy.