The prevalence, severity and risk factors for pterygium in central Myanmar: the Meiktila Eye Study

S R Durkin,[1] S Abhary,[1] H S Newland,[2] D Selva,[2] T Aung,[3] R J Casson[1]

[1] South Australian Institute of Ophthalmology, Adelaide, Australia; [2] Department of Ophthalmology & Visual Sciences, The University of Adelaide, Adelaide, Australia; [3] Yangon Eye Hospital, Yangon, Myanmar

Correspondence to:
Dr S R Durkin, South Australian Institute of Ophthalmology, Ophthalmology Network, Royal Adelaide Hospital, North Terrace, Adelaide, South Australia, Australia 5000; shane_durkin@yahoo.com

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ABSTRACT

Aims: To determine the prevalence, severity and risk factors associated with pterygium in adults in central Myanmar.

Methods: Population-based, cross-sectional survey of the people 40 years and over residing in rural Myanmar. Pterygium was graded for severity (T1 to T3) by visibility of episcleral vessels, and the apical extent was recorded. An autorefractor was used to measure refractive error.

Results: There were 2481 subjects identified, and 2076 (83.7%) participated. The prevalence of pterygium in either eye was 19.6% (95% confidence interval (CI) 16.9 to 22.2) and of bilateral pterygium 8.0% (95% CI 7.7 to 8.3). Outdoor occupation was an independent predictor of pterygium ($p<0.01$). The mean apical extent from the limbus was 2.2 mm (95% CI 2.05 to 2.35). Higher-grade pterygia did not have a significantly greater apical extent ($p = 0.35$). The presence of pterygium was associated with astigmatism, ($p = 0.01$), and the amount of astigmatism increased as both the severity ($p<0.01$) and apical extent increased ($p<0.01$). Two people of the 84 people blinded in both eyes were bilaterally blind from pterygium (1.7%; 95% CI 0.2 to 6.1), and pterygium accounted for 2.2% (95% CI 0.7 to 5.0) of blindness in at least one eye. No participant had low vision in both eyes due to pterygium, but pterygium led to 0.8% (95% CI 0.3 to 1.6) of low vision in at least one eye. Pterygium was therefore associated with 0.4% (95% CI 0.04 to 1.3) of binocular visual impairment and 1.0% (95% CI 0.6 to 1.8) of visual impairment in a least one eye.

Conclusions: There is a high prevalence of pterygium in central Myanmar, and the risk of developing this condition increases with outdoor occupation. Pterygium in this population is associated with considerable visual morbidity, including blindness.

Pterygium is often considered to be a primarily cosmetic concern; however, visual reduction may ensue due to induced astigmatism and eventually obscuration of the visual axis. Sunlight, in particular, ultraviolet-B radiation, is a major risk factor; and population-based studies[1–10] demonstrate region-dependent prevalence rates, ranging from 1.2% in urban, temperate Caucasian populations,[6] to 36.6% in adult Indians of the Brazilian rainforest.[1] But even in studies conducted in tropical zones[1–5 7 9] visual impairment (acuity<6/18) due to pterygium is rare, and to our knowledge, pterygium blindness has never been reported in a population-based study. The Meiktila District in central Myanmar is predominantly a rural region, where, anecdotally, pterygium remains a cause of preventable visual impairment. Robust epidemiological data from this region regarding the prevalence, severity, impact on vision, and risk factors for pterygium would assist in the development of prevention and treatment strategies using the limited available healthcare resources.

MATERIAL AND METHODS

The Meiktila Eye Study was a population-based, cross-sectional ophthalmic survey of the inhabitants of rural villages in the Meiktila District of central Myanmar. The township of Meiktila lies centrally within this District and is located at 20°53′N, 95°53′E. Meiktila has a tropical climate with an average sun transit time of 12 h, and the people are predominantly involved in outdoor, agricultural activities. Participants were randomly selected using a stratified, cluster sampling process. A sampling frame consisting of the list of all villages in the Meiktila District with their populations was obtained from the Ministry of Health. Villages were arbitrarily stratified as large (population of 826 or more) or small (population of 825 or less), with small villages in each of the six zones within the Meiktila District constituting six separate strata. (This design was chosen to optimise the precision of the visual impairment prevalence estimates.) Detailed methodology has been published elsewhere.[11]

Study population

In brief, all persons 40 years and over within each selected village were eligible for inclusion. There was a total sample population of 2481 people, all belonging to the Burman ethnic group.

Data collection

Data collection occurred at the end of the rainy season in November 2005. A single survey team conducted the entire study. All equipment and personnel were transported to each village, and the data collection occurred on site. A medical and ophthalmic history was obtained from each patient in their own language by qualified healthcare workers. The interview obtained information about smoking, occupation and the use of ophthalmic drops (most commonly gentamicin). Each participant then received a comprehensive vision and eye examination, which included: presenting, and pin-hole visual acuity (VA) using a consistently lit, non-linear, front-illuminated, illiterate, E Snellen chart at 6 m; slit lamp (Model SL-3C, Topcon, Tokyo) examinations of ocular surface, anterior segment, and lens; and stereoscopic fundus examination. If the VA was <6/18 in