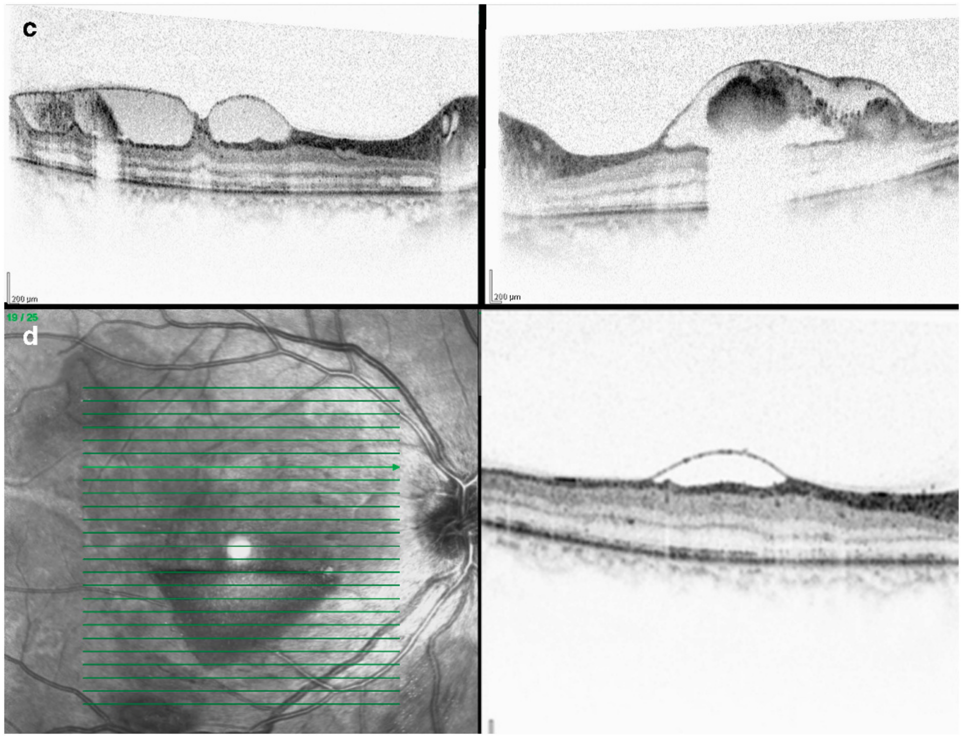

Figure 1 (Continued).

by SD-OCT, providing us more insight into the pathophysiology of the condition and serve as an excellent tool in monitoring these hemorrhages.

Conflict of interest

The authors declare no conflict of interest.

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Sir,

Corneal birefringence measurements in normal Indian eyes

Studies investigating the corneal birefringence measurements are largely restricted to Caucasian population.[1–3] We therefore evaluated the corneal birefringence measurements in normal subjects of Indian origin.

Case report

In a cross-sectional study, 140 eyes of 73 subjects of Indian origin (37 men and 36 women) underwent corneal birefringence measurements with scanning laser polarimetry (GDxPRO, Carl Zeiss Meditec Inc., Dublin, CA, USA). Inclusion criteria were best-corrected visual acuity of 20/30 or better, spherical refraction within ± 5.0 D and cylinder correction within ± 2.0 D. Subjects were excluded if they had any ocular surface, corneal or macular pathology, or a history of previous corneal or intraocular surgery. Measures of corneal birefringence obtained were corneal polarization axis (CPA) and corneal polarization magnitude (CPM).[4] Corneal scans were retaken if the quality score was <8. Central corneal thickness was measured using the ultrasound pachymetry.

Table 1 and Figure 1 show the distribution of CPA and CPM. Median CPA was 3° nasally downwards with 85% of the eyes having a CPA value between 9° nasally downwards and 5° nasally upwards. The mean CPM was 96 nm (95% CI: 92.4–99.0). There was a significant

Table 1 Demographic and characteristic features of the study subjects (140 eyes of 73 subjects)

	Mean ± *SD*	*Range*
Age (years)[a]	41 (22, 54)	19–68
Central corneal thickness (μm)	527 ± 29	457–611
Corneal polarization magnitude (nm)	96 ± 20	57–140
Corneal polarization axis (degrees)[a]	3.0 (− 0.7, 6.1)	− 42.3–23.4

[a] Median with first and third quartiles.

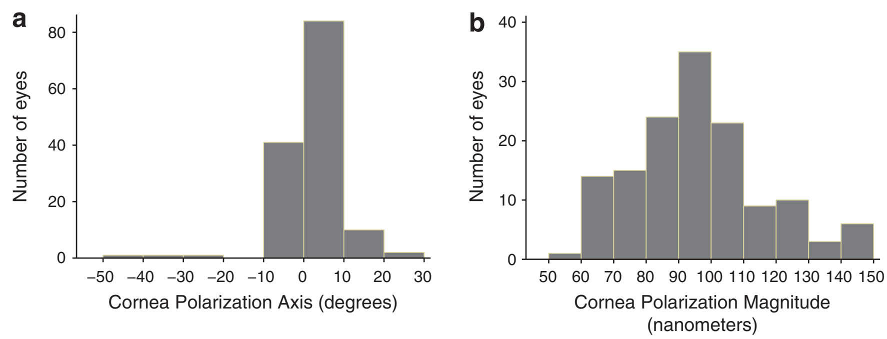

Figure 1 Distribution of corneal polarization axis (a) and magnitude (b) in the study cohort.

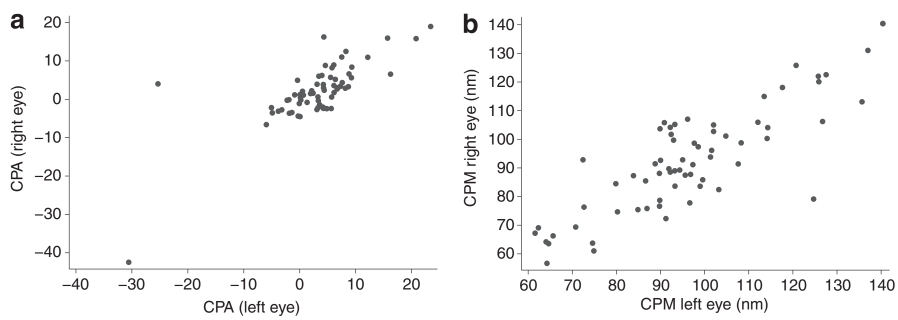

Figure 2 Scatterplot showing the correlation between (a) corneal polarization axis (CPA) and (b) corneal polarization magnitude (CPM) measurements of the right and left eye of 67 subjects whose both eyes were imaged.

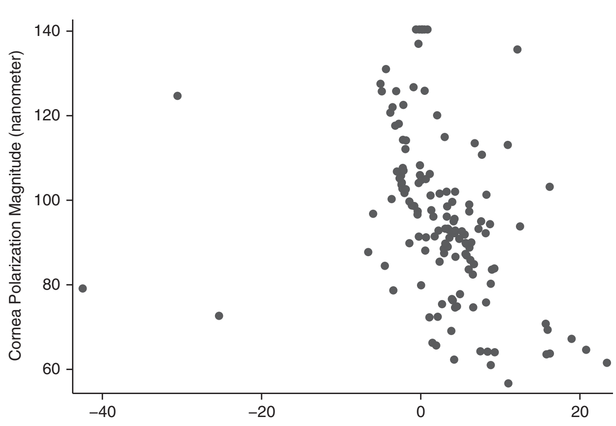

Figure 3 Correlation between corneal polarization axis and magnitude.

($P<0.001$) correlation between the fellow eyes both for CPA ($R^2=0.57$) and CPM ($R^2=0.72$) measurements (Figure 2). Figure 3 shows that CPA and CPM were significantly ($R^2=0.12$; regression coefficient, $\beta=-0.91$; $P<0.001$) associated with each other.

Age, gender, and corneal thickness showed no significant association with corneal birefringence measurements (Table 2).

Comments

Wide variability in CPA and CPM has been reported in Caucasian eyes too.[1–3] However, CPA values in Caucasians were mostly between 10° and 20° nasally downwards, which were significantly different from that found in Indian eyes. Wider range of CPM values was found in the Caucasian eyes, with 20% of eyes showing CPM values lower than 40 nm and higher than 140 nm.[2]

Table 2 Results of linear mixed model (after accounting for the correlations between fellow eyes of the same subject) showing the effects of age, gender and corneal thickness on corneal birefringence measurements

Parameter	*Age*		*Gender*		*CCT*	
	β *(SE)*	P	β *(SE)*	P	β *(SE)*	P
CPA	0.03 (0.06)	0.54	−1.08 (1.78)	0.55	0.003 (0.01)	0.84
CPM	−0.02 (0.15)	0.90	4.74 (4.83)	0.33	−0.01 (0.03)	0.83

Abbreviations: CCT, central corneal thickness; CPM, corneal polarization magnitude; CPA, corneal polarization axis; *β*, coefficient; SE, standard error.

CPM reported by Weinreb *et al*[3] also ranged between 22 and 150 nm. These differences in corneal birefringence properties may indicate differences in the internal structure of the cornea, which may be responsible in part to the differences in the prevalence and progression of corneal ectatic conditions like keratoconus between ethnicities.[5]

Conflict of interest

Rao HL and Garudadri CS are consultants at Allergan. Garudadri CS is also a consultant at Merck and Alcon. All other authors declare no conflict of interest.

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Sir,

A standardised technique for locating periocular lesions and biopsy sites

In tertiary referral centres a number of patients are referred with eyelid malignancies, which have been confirmed by biopsy. The precise location of the biopsy is not always specified and this can lead to a dilemma if the biopsy site has healed. A similar problem exists when a seemingly benign lesion is treated by excision biopsy and turns out to be malignant. Pre-operative photography has usually not been performed due to the lesion appearing benign. The original biopsy site is often difficult to locate owing to rapid healing.

A standardised localisation technique would be helpful in the further management of these patients. Trilateration is used in surveying, navigation, and global positioning systems. It involves the determination of absolute or relative locations of points by the measurement of distances using the geometry of spheres or triangles (http://gps.about.com/od/glossary/g/trilateration.htm). In a 2D plane, using the medial and lateral canthi as reference points, trilateration locates two points (Figure 1). Then specifying whether the site is in the upper or the lower lid narrows it down to one location.

Small lesions <10 mm diameter and biopsy sites were localised by measuring the following:

(a) Distance (mm) from the centre to the medial canthus.
(b) Distance (mm) from the centre to the lateral canthus.
(c) Distance (mm) from the centre to the lid margin (grey line) if located away from the lid margin.

For larger lesions >1 cm diameter measurements should be taken to the medial and lateral margins of the lesion for documentation.

Measurements in the lower eyelid are made with the eye open and in the upper lid with the eye gently closed. The dimensions of all lesions are recorded as standard along the long axis and at 90°.

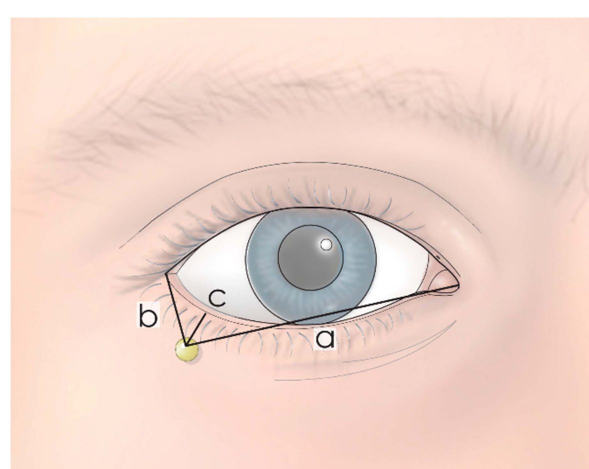

Figure 1 Trilateration of lower eyelid lesion.