Pterygium in Ceylon

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The geographical situation of Ceylon led Cameron (1965) to suggest that the pterygium rate there would range from 5.5 to over 10 per cent., but the actual incidence appears to be much less for reasons which are discussed below.

The incidence of pterygium has not been closely studied, first perhaps because it rarely causes blindness, secondly because the world's earliest eye hospitals were situated in temperate climates where the condition is rare, and thirdly because it has not attracted the interest of ophthalmic surgeons in the same way as cataract, retinal detachment, strabismus, and corneal grafting. The surgery of pterygium tends to be labelled 'minor' and to be relegated to assistants.

The chief method of assessment has been the compilation of statistics based on hospital and private practice; it is difficult to obtain figures for a whole population except in small and accessible groups.

Cameron (1965) found an incidence of 12.3, 10.9, and 14.0 per cent. in three ophthalmic practices in and around Brisbane. Alvaro found a rate of 4.9 per cent. in a hospital practice in Rio de Janeiro (Anderson, 1954). Dimitry (1937) estimated the rate in the United States of America by studying the percentage of pterygium operations. States lying close to the equator showed an average of 7 per cent., while those lying further north showed an average of 2.5 per cent. and those beyond Lat. 40° North an average of 2 per cent.

Similarly, in the Princess Alexandra Hospital in Brisbane, the rate for July to December, 1961, was 15.9 per cent. (Cameron, 1965), and Law (1959) found that in Brisbane there was a percentage of 40.5 pterygium operations in a total of 700, whereas there was not one among 36,000 patients attending the Westminster Hospital, London.

Saif, El Gammal, Barrada, and Mahfouz (1967) reported 54,187 pterygium operations out of 577,428 eye operations for the years 1953–56, 1961, and 1964 in Egypt, which gives an incidence of 9.3 per cent.

Corboy (1941) found an incidence of 17 per cent. in a population of 503 plantation workers and Crawford (1944) estimated an overall incidence of 14 per cent. in Hawaii.

Mann (1961) found 6.75 per cent. among 402 persons forming the entire population of Cocos, and 2.7 per cent. among 650 persons in the Marshall Islands.

Present investigations

This study is based on data collected in Ceylon from three sources:

- (1) Hospital attendances at seven representative areas in Ceylon – The Eye Hospital, Colombo, and the departments of ophthalmology attached to six provincial hospitals (total 81,107).
- (2) Attendances at a free eye clinic in the city of Colombo (total 1,202).
- (3) Major eye operations carried out over a period of 18 years by the author (total 9,211).

Results

Table I summarizes the percentage incidence of pterygium in these categories. The 81,107 patients in the hospital series were seen in the seven areas shown in the map, and the percentage in these areas ranges from 1 to 0.57 (Table II). Of the four areas with a higher percentage, two are on the coast (Colombo and Negombo-Chilaw-Puttalam), but there is a low incidence in Jaffna and Batticaloa, which are also coastal areas well known for their fishing industry. Kandy, situated in the hills, has a lower incidence, but it is not truly representative of the central highlands and, as there are no eye centres in the higher hill country, statistics there have been difficult to obtain.

Table I Sources of data

Source of data	Patients seen or operated on	
	Total No.	Pterygium cases
		No. Per cent.
Hospital attendances, 1965—1967	81,107	592 0.7
Attendances at a charity clinic in Colombo	1,202	10 0.8
Author's major eye operations	9,211	55 0.6

FIGURE Map of Ceylon to show vegetation and location of ophthalmic clinics

Sex distribution (Table III) There are more male than female patients except in Negombo-Chilaw-Puttalam, and here the women take a greater part in the fishing industry.

Age distribution (Table IV) The incidence of pterygium increases with age and this suggests that it is more likely to affect those who have been longer exposed to the climatic or occupational conditions which favour its development.

Table II *Incidence of pterygium among hospital patients in seven principal areas*

Station	Total cases seen	Total cases of pterygium	
		No.	Per cent.
Colombo	10,000	73	0.75
Ratnapura	18,828	155	0.8
Batticaloa	24,000	146	0.6
Jaffna	9,000	53	0.57
Negombo-Chilaw-Puttalam	9,000	98	1.0
Kandy	6,463	44	0.6
Anuradhapura-Trincomalee	2,716	23	0.8
Total	81,107	592	0.7

Table III *Incidence of pterygium, by sex*

Station	Total Cases	Males		Females	
		No.	Per cent.	No.	Per cent.
Colombo	73	55	75	18	25
Ratnapura	155	118	76	37	24
Batticaloa	146	94	64	52	36
Jaffna	53	34	64	19	36
Negombo-Chilaw-Puttalam	98	50	51	48	49
Kandy	44	30	68	14	32
Anuradhapura-Trincomalee	23	17	74	6	26
Total	592	398	66.5	194	33.5

Table IV *Incidence of pterygium, by age*

Age (yrs)	Cases of pterygium	
	No.	Per cent.
0-9	2	0.9
10-19	18	3
20-29	93	15
30-39	152	25.6
40-49	145	25
50-59	115	19.6
60-69	58	10
70 and over	9	1.5
Total	592	100.0

Climate of Ceylon

The island lies in the Indian Ocean between Lat. 6° and 10° N. It is 250 miles long and 135 miles wide, and the central highlands rise to a height of nearly 9,000 ft. The two monsoons, the South-west from May to July and the North-east from October to December, bring a fairly heavy rainfall. The luxuriant vegetation includes wet and dry zone forests, scrub forest, and grasslands (see Map). The surrounding sea with numerous lagoons and rivers maintains an equable temperature, averaging 80°F. in the lowlands and 60°F. in the hills. The amount of cloud cover, an aspect of climatology of special significance in the aetiology of pterygium, is shown in Table V (overleaf).

The insolation, rainfall, humidity, and wind speeds are given in Tables VI and VII (overleaf).

Table V *Cloud cover over areas studied**

Station	Month		
	Feb.	Jun.	Nov.
Colombo	4.0	6.6	5.5
Ratnapura	4.9	6.9	5.9
Batticaloa	4.7	4.7	5.2
Puttalam	3.5	6.0	5.2
Jaffna	3.4	5.0	5.4
Kandy	3.9	6.6	5.6
Anuradhapura	4.1	5.9	5.6

*30-year average, 1931 to 1960;
Maximum = 8
(Mean of 08.30 and 17.30 hrs)

Table VI *Insolation (Colombo)*

Phenomenon	Quantities
Hours of sunshine	12
Elevation of sun	90° at noon
Total radiation, Sun/Sky (monthly totals)	15,750 Cals/cm. ² March 9,843 Cals/cm. ² December
Ultra-violet radiation 1,000–3,000 Å (calculated)	0.02 microwatts/cm. ² /min. at noon

Table VII *Rainfall, humidity, and wind speed (30-year average, 1931–60)*

Station	Rainfall (in.)	Per cent. humidity		Wind speed
		Day	Night	Miles/hr
Colombo	94.3	76	89	5
Ratnapura	153.1	76	93	—
Batticaloa	66.9	74	87	7
Jaffna	52.3	76	86	10
Negombo	77.2	72	90	—
Puttalam	43.6	74	88	8
Anuradhapura	56.8	70	92	—
Trincomalee	67.9	70	83	9

Comment

In Ceylon, where the demand for ocular surgery is mainly for blinding or painful eye conditions, cosmetic surgery is not much sought after and few patients would seek removal of pterygia. The statistics provided by general ophthalmic practice are therefore more reliable. It is accepted the pterygium occurs in an equatorial belt delimited by Lat. 40°N and S (Cameron, 1965; Elliot, 1966), and Cameron's study of the relationship between ultra-violet light in different parts of the world and the incidence of pterygium was the first indication of the causation of this condition.

No absolute values of the incident ultra-violet radiation are available for Ceylon. The calculated value in Table VI does not entirely cover the wavelengths that reach the surface of the earth and one has, therefore, to rely on the premise that ultra-violet radiation over Ceylon must equal that over other parts of the world at similar latitudes.

According to Cameron's calculations the expected pterygium rate in Ceylon should be more than 10 per cent. as in other lands in the same latitude, and his map depicting the world distribution of pterygium computes a rate of 5 to 9 per cent., but the figures presented above show a much lower incidence of only 0.57 to 0.8 per cent.

The chief reason for this difference must be the humidity and abundant rainfall, leading to thick vegetation and absence of solar glare. Elliott (1966) has, in fact, stated that the incidence of pterygium in equatorial regions may still be low provided a high humidity prevails and direct or reflected solar radiation is rendered less harsh by dense vegetation.

Summary

No information on the incidence of pterygium in Ceylon has so far been available, except the pterygium maps compiled by Cameron (1956), according to which the rate should be between 5 and 10 per cent. Data from hospital attendances in seven different areas, attendances at a charity eye clinic in Colombo, and numbers of pterygium operations performed by the author in the past 18 years give rates of 0.7, 0.8, and 0.6 per cent. respectively.

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