# CORNEAL ULCERS IN SINGAPORE*

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## SYNOPSIS

**147 cases of corneal ulceration seen at the Singapore General Hospital were studied and analysed for sex and age distribution, causative factors and response to treatment.**


## INTRODUCTION

Let me begin by quoting an opthalmologist's prayer:

"O Lord, if I must have an infection of the eye,
Let it not be herpetic nor mycotic." Kuang-Hui Lim, 1976.

The validity of the prayer shall be borne out by this morning's symposium on the cornea, for amongst the painful conditions of the eye, and a potentially blinding disease, is an ulceration of the cornea—and infections by herpes simplex virus and fungi are the devil to treat. In a study on causes of blindness of 1,959 cases in Singapore for 1950-1972, it was observed that corneal disease accounted for 25 per cent of total causes of blindness for the period 1950-1952, 24.8 per cent for 1953-1956, 21.6 per cent for 1957-1960, 18.5 per cent for 1961-1964, 5.7 per cent for 1965-1968 and 12.3 per cent for 1969-1972 (Lim, 1975). By 1975, corneal blindness amounted to 6.9 per cent. Thus, corneal causes of blindness in Singapore are on the decline and one would expect that with the elimination of malnutrition and keratomalacia (Loh, 1964) by an improving economy and standard of living, and the eradication of infection by the development of newer and more potent antibiotics, the fear of corneal disease would belong to the days of the past—but viruses and fungi remain virtually unassailable, not to mention degenerative and non-infective causes of ulceration which can follow, on the one end, from trival injury to the other extreme of indeterminate causes as we have observed.

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## MATERIALS AND METHODS

147 consecutive cases of corneal ulceration, severe to warrant admission to the ophthalmic wards of the government General Hospital in Singapore, were studied during the 2½ year period from October 1971 to February 1974 (see Table I). Some of the cases were refered by ophthalmologists from the private sector, but the bulk came from government out-patient clinics, general practitioners and through the hospital's emergency service. The cases are analysed in Table II.

## RESULTS

### Analysis

Of 147 cases, 112 (76.2 per cent) were males and 35 (23.8 per cent) females. The age distribution was nearly equal, ranging from adolescents (age below 30 years): 56 cases (38 per cent), to adults (age 30-60 years): 52 cases (38.3 per cent) and older folks (age above 60 years): 39 cases (26.5 per cent). The sex distribution within the age groups correlated with the age distribution of the disease.

**TABLE I: Corneal Ulcers in Singapore**

| | |
|---|---|
| General Survey | |
| Number of patients: | 147 Consecutive cases. |
| Duration of study: | October 1971 to February 1974. |
| Place: | General Hospital, Singapore. |

**TABLE II: Analysis of 147 Cases**

| | Male | Female | Total |
|---|---|---|---|
| **Number of patients** | 112 (76.2%) | 35 (23.8%) | 147 |
| **Age of patients** (in decades) | | | |
| 1—2 | 43 (38.4%) | 13 (37.1%) | 56 (38%) |
| 3—5 | 43 (38.4%) | 9 (25.8%) | 52 (35.3%) |
| 6—8 | 26 (23.2%) | 13 (37.1%) | 39 (26.5%) |
| | 112 | 35 | 147 |
| **Aetiological factors** | | | |
| Viral | 40 (35.7%) | 11 (31.5%) | 51 (34.6%) |
| Bacterial | 26 (23.2%) | 7 (20.0%) | 33 (22.4%) |
| Fungal | 17 (15.2%) | 5 (14.3%) | 22 (14.9%) |
| Mechanical | 12 (10.7%) | 6 (17.1%) | 18 (12.2%) |
| Complicated (Bact. & Fungal) | 3 (2.7%) | | 3 (2%) |
| Others (Chem., Exposure, Allergy etc.) | 14 (12.5%) | 6 (17.1%) | 20 (13.6%) |
| | 112 | 35 | 147 |
| **Complications** | | | |
| Clear | 15 (13.4%) | 9 (25.7%) | 24 (16.3%) |
| Nebula | 58 (51.8%) | 18 (51.4%) | 76 (51.7%) |
| Hypopyon | 17 (15.2%) | 3 (8.6%) | 20 (27.2%) |
| Leucoma | 9 (8.0%) | 3 (8.6%) | 12 (8.1%) |
| Others | 13 (11.6%) | 2 (5.7%) | 15 (10.2%) |
| | 112 | 35 | 147 |

### Presumptive Cause

Associated aetiologic factors were: viral 51 cases (34.6 per cent), bacterial 33 (22.4 per cent), presumed and proven fungal 22 (15 per cent), mechanical 18 (12.2 per cent), complicated 3 (2 per cent), and others 20 (13.6 per cent). The criteria for the different types are based on history, clinical appearance and laboratory support, where available.

Bacterial causes referred to those cases where conjunctival swabs yielded pathogenic organisms on bacterial culture—a variety of organisms were grown and the chief villian was pseudomonas pyocyaneas. Cases were presumed to be fungal on clinical grounds—viz. fulminating corneal abscesses that rapidly went on to intraocular infection and destruction, although in several instances species of Aspergillus fumigatus and Candida were cultured from corneal scrapings. We were also fortunate to liaise with Professor Barrie R. Jones (Jones, 1973) in some of the fungal cases studied who also made "clotrimazole" eye-drops available to us. Mechanical causes referred to physical trauma, whilst the others included association with chemical burns (acids and alkalis), exposure keratitis, allergy and indeterminate factors.

### Visual Results

Taken altogether, 24 cases (16.3 per cent) regained clarity, whilst 76 cases (51.7 per cent) were complicated by nebula, 20 (27.2 per cent) by

**TABLE III: Viral Type (Mainly Dendritic)**

| | Male | Female | Total |
|---|---|---|---|
| **Age of patients** (in decades) | | | |
| 1—2 | 20 (50.0%) | 4 (36.4%) | 24 (47%) |
| 3—5 | 17 (42.5%) | 1 (9.0%) | 18 (35.2%) |
| 6—8 | 3 (7.5%) | 6 (54.6%) | 9 (17.6%) |
| | 40 | 11 | 51 |
| **Leave** (in sick weeks) | | | |
| 1 | 12 (30.0%) | 6 (54.5%) | 18 (35.3%) |
| 2 | 14 (35.0%) | 3 (27.3%) | 17 (33.3%) |
| 3—4 | 10 (25.0%) | 1 (9.1%) | 11 (21.5%) |
| 5—6 | 4 (10.0%) | 1 (9.1%) | 5 (9.8%) |
| | 40 | 11 | 51 |
| **Response to treatment** | | | |
| Improved | 33 (82.5%) | 11 (100.0%) | 44 (86.2%) |
| Recurred | 7 (17.5%) | — | 7 (13.7%) |
| Deteriorated | — | — | — |
| | 40 | 11 | 51 |
| **Treatment** | | | |
| Conservative | 37 (92.5%) | 10 (90.9%) | 47 (92.1%) |
| Surgical | 3 (7.5%) | 1 (9.1%) | 4 (7.9%) |
| | 40 | 11 | 51 |
| **Visual results** | | | |
| Maintained | 38 (95.0%) | 10 (90.9%) | 48 (94.1%) |
| Worse | 2 (5.0%) | 1 (9.1%) | 3 (5.9%) |
| | 40 | 11 | 51 |

hypopyon, 12 (8.1 per cent) by leucoma, and 15 (10.2 per cent) had other complications, viz. descemetocoele, panophthalmitis and perforation. Seven cases required evisceration, 4 for fungal, 2 for pseudomonas and 1 cause unknown.

### Viral Cases

The 51 presumed viral cases are further analysed in Table III. The majority were dendritic ulcers from presumed herpes simplex infection. Virus study was not performed, the diagnosis being made on clinical features. Zoster ophthalmicus keratitis was not included in the study. Of these cases, males predominated females, and more so in the adolescents and young adults as shown in Table III. The morbidity of illness varied from 1 to 4 weeks. The majority, i.e. 44 cases (86.2 per cent) improved, whilst 7 (13.7 per cent) had recurrence and 4 cases required tarsorraphy for recurrent ulceration. Treatment consisted essentially of I.D.U. (5-iodo-2-desoxyuridine) eye-drops and ointment with patching for flouresceine staining denuded ulcers, and selective addition of steroidal eyedrops for stromal clouding—so the adage "never steroids for dendritics" is not entirely true. Cautery with iodine was attempted in selected cases of fresh, single ulcers. Anti-herpes vaccine, which became available, was not used in cases studied. Altogether, 48 cases (94.1 per cent) maintained vision, whilst 3 (5.9 per cent) worsened. One thinks one knows all about herpes until one begins to treat a case and that was our experience.

## DISCUSSION

Corneal blindness in Singapore declined when malnutrition was eradicated, common bacterial infections overcome, and prospects for corneal surgery improved with the advent of keratoplasty (Lim, 1975). Fortunately, the majority of cases of corneal ulceration seen were treatable but herpes simplex infection and fungal abscess remain therapeutic problems with potentially poor visual prospects.

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