Prevalence of trachoma among children in East Jerusalem in 1980

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SUMMARY In an ophthalmic survey conducted in East Jerusalem during 1980 comprising 8896 nursery and primary school children aged 3 to 12 years not a single case of active trachoma could be detected. A similar study carried out in 1968, encompassing the same geographical area, revealed a prevalence of 6.4% among the school children and of 12.5% among the nursery school infants, while a subsequent survey performed in 1971, including the same population age group, showed a sharp decrease in the incidence of trachoma to a level as low as 1%. This gradual and continuous decline in the prevalence of the disease towards its end point of apparent eradication was preceded by a marked improvement in the socioeconomic status and personal and public hygiene of the general population.

Endemic trachoma constitutes a major public health threat and is the chief cause of visual impairment and preventable blindness in certain developing countries. In fact this disease still remains a universal problem.¹ Despite the immense efforts invested in its eradication about 400 to 500 million individuals are afflicted with it.² One of the major areas of the world where trachoma is as yet undefeated is the Middle East.³⁻⁵

Epidemiological studies have recorded a prevalence of 36% among the young population in certain parts of Saudi Arabia⁶ and of 60.1% in Abu-Dhabi.⁷ In 1922 active trachoma was prevalent in 72% of the Arab school children throughout Palestine, while in 1939 this incidence had decreased to 49%.⁸ In 1968, during an ophthalmic survey in East Jerusalem, trachoma was found in 12.5% of nursery school infants and in 6.4% of primary school children.⁹ At this time an antitrachoma campaign was started, including treatment with antibiotic eye ointments. A subsequent study performed in 1971 including the same primary and nursery schools showed an incidence of only about 1% in this population group.⁹

In view of recent improvements in social and medical conditions an additional epidemiological study, applying the same basic clinical designs and encompassing the nursery and primary schools of the

previous 2 surveys conducted by Maythar in 1968 and 1971, was undertaken to assess the current frequency and trend of trachoma.

Subjects and methods

Of the 26 governmental primary and nursery schools in East Jerusalem and environs 24 randomly chosen schools, with an attendance of 9364 pupils aged between 3 and 12 years, form the basis of this report. The eyes were examined with the aid of a 2 times magnifying loupe under proper illumination. The eyelids, the cornea, the corneoscleral limbus, and the bulbar, tarsal, and forniceal conjunctiva were thoroughly checked. Exploration of the last was achieved by flipping up the upper eyelid with 2 fingers while the child was looking down and at the same time exerting pressure on the globe from below, thus causing protrusion of the forniceal conjunctiva, where the follicles of trachoma usually appear first.

The criteria for the diagnosis and classification of the disease were based on the scoring system established by the WHO Expert Committee¹⁰ and the WHO Fourth Scientific Group¹¹ and modified by us (Table 1). Patients with suspected trachoma, screened out during the examination, underwent slit-lamp biomicroscopy assessment and conjunctival scraping. The smears were Giemsa stained and tested for the presence of inclusion bodies. This latter method has remained the easiest technique available, and is a

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Table 1 Criteria for classification and diagnosis of trachoma

Clinical ocular findings	Scoring				
	0	1	2	3	4
Conjunctival hyperaemia	Absent	Mild	Moderate	Severe	Haemorrhagic
Conjunctival follicles	Absent	<5	5–10	11–15	>15
Conjunctival papillae	Absent	Minimal	Moderate	Pronounced	—
Corneal infiltrate	Absent	<1.5 Thickened cornea	>1.5 Thickened cornea	—	—
Pannus	Absent	<1 mm in the cornea	1–1.5 mm in the cornea	>1.5 mm in the cornea	—
Herbert's pits	Absent	1–3	>3	Entire upper lunula involved	Cornea encircled
Conjunctival scar	Absent	Mild	Moderate	Severe	Trichiasis and/or entropion

widely accepted mode for epidemiological screening for trachoma.¹²

Results

Of a total of 9364 pupils attending the schools included in the survey 8896 participated in the study and were screened for trachoma. On initial examination only 3 children displayed follicular infiltrate of the upper palpebral and forniceal conjunctiva in both eyes which, in spite of normal corneas and limbi, was suggestive of active trachoma. Biomicroscopy and laboratory tests failed to confirm the diagnosis. In one of the children a bacterial infection was diagnosed and successfully treated with antibiotics. Examination for the presence of inclusion bodies performed in 37 additional children with clinical signs of follicular or papillary hypertrophy due to nonspecific or allergic conjunctivitis proved negative.

Discussion

In the present study, undertaken 10 years after the previous studies by Maythar,⁹ and involving the same nursery and elementary schools as those of Maythar's survey, when 8896 of 9364 (95%) regularly attending pupils were examined, no cases of active trachoma could be detected. The absence of the 468 children on the screening days was due to a variety of reasons and does not represent parental noncompliance with the survey itself. Moreover the number of absentees compared with that of the examined children is too small to affect the results statistically ($p=0.0003$).

The findings of the current survey unequivocally demonstrate that the incidence of trachoma has steadily declined, approaching zero, thus reaching the desired end point in the fight for eradication of the disease in the geographical area at issue. Considering the fact that no preventive medical treatment has been administered in the last decade—except a

routine sanitary supervision—it is reasonable to assume that these satisfactory results are due to the constantly improving hygienic and socioeconomic conditions.

The third report of the WHO Expert Committee¹⁰ listed the following environmental factors as influencing the frequency of trachoma: race, climate, insect vectors, population density, diet and nutrition, cultural and social customs, general economic level, extrinsic contacts, educational level, and the presence of other ocular or general diseases.

Among all these factors only the first 2 and the social customs have remained unchanged in East Jerusalem, while all other conditions enumerated above have been vastly improved. The marked progress in the socioeconomic conditions and educational levels have been conducive to a decrease in population density and as well as to the enhancement of the dietary and nutritional state. At the same time the tremendous decrease of insect vectors, which are mainly responsible for the extrinsic contact, has contributed to the abolition of ocular discharge transmitted by flies.¹³ The present availability of running water in almost every home and school, as well as the diminished incidence of bacterial conjunctivitis, largely facilitated the defeat of trachoma.

We are greatly indebted to Professor I. C. Michaelson and Dr B. Maythar for their valuable guidance.

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