PREVALENCE OF SYPHILIS IN CEYLON*

REPORT BASED ON THE RESULTS OF SEROLOGICAL SURVEYS MADE BY THE
WORLD HEALTH ORGANIZATION V.D. CONTROL TEAM, 1951-52

BY

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In 1951, at the request of the Government, the World Health Organization developed a V.D. control project in Ceylon. A serological survey of various groups in the population was one of the first tasks undertaken to estimate the magnitude of the problem as the prevalence of venereal disease was quite unknown. As it had been decided that the project was to give high priority to the prevention of congenital syphilis, serological testing of expectant mothers was quickly established in the antenatal clinics of the main maternity hospital in Colombo. As soon as possible thereafter this routine testing was introduced in all the antenatal clinics of the city. In December, 1951, some 29 tea estates were visited in the rural areas, and blood was drawn from the expectant mothers amongst the labour force of each estate. In addition, a survey of males in certain occupational groups was made. During the year ending August, 1952, 9,094 persons were tested during these surveys. The results obtained and the conclusions reached form the basis of this communication.

Persons Surveyed

These formed five main groups, as follows :

Group 1.—6,067 expectant mothers comprising four sub-groups :—

- (a) 1,000 cases attending the antenatal clinics of the de Soysa Maternity Hospital, Colombo (almost wholly Ceylonese).
- (b) 2,326 cases attending the antenatal clinics of Castle Street Maternity Hospital, Colombo (almost wholly Ceylonese).
- (c) 1,555 cases attending the antenatal clinics of the Colombo Municipality (mixed races but predominantly Ceylonese).
- (d) 1,186 expectant mothers from the labour force population on 29 tea estates (Tamils).

Group 2.—1,725 males in disciplined Services and subject to entrance medical examination.

- (a) 567 men of the Ceylon Police stationed in the Colombo area.
- (b) 363 recruits to the Ceylon Police.
- (c) 795 men of the Ceylon Army.

Group 3.—563 males engaged in various trades and not subject to entrance medical examination.

Group 4.—542 students of either sex and over 17 years of age.

Group 5.—197 schoolboys between 5 and 16 years of age.

Serological Tests

Blood was collected by venepuncture using "Vacutainer" equipment. The serological examinations were carried out, normally on the day following collection of the specimens, in the Medical Research Institute, Colombo. All specimens were tested by the standard Kahn and Kline (cardiolipin) tests. Positive sera were further examined by the quantitative Kahn test. The results are given in Table I.

TABLE I
RESULTS OF SEROLOGICAL SURVEYS

	Group	Number tested	Number Positive	Per cent. Positive
1	a	1,000	43	4.3
	b	2,326	84	3.2
	c	1,555	75	4.8
	d	1,186	57	4.8
	Total expectant mothers	6,067	259	4.2
2	a	567	29	5.1
	b	363	12	3.3
	c	795	22	2.8
	Total servicemen ..	1,725	63	3.6
3.	Workmen	563	35	6.2
	Total men (2 and 3) ..	2,288	98	4.1
4.	Students	542	10	1.8
5.	Schoolboys	197	1	0.5
	Grand Total (1 to 5) ..	9,094	368	4.0

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Interpretation of Results

(1) **Serological.**—Cases giving a positive result in both the Kahn and Kline tests on the first blood specimen were, whenever possible, subjected to a repeat blood examination. Local factors made satisfactory follow-up in certain groups very difficult (*e.g.* incorrect address and frequent change of domicile), but repeat examination was achieved in 100 per cent. of the Police and Army groups (2a, 2b, and 2c, above). The follow-up achieved is set out in Table II.

TABLE II
PERCENTAGE PATIENTS FOLLOWED-UP

Group	Percentage
1	75 84 90 not attempted
2	100
3	90
4	60
5	100

Cases were classified as "Positive" when :

- the initial positive result was confirmed by a second test ;
- the first result was definitely positive (two or more plus) but the case could not be traced for repetition.

Cases were classified as "Negative" when :

- the first examination was negative ;
- the first examination gave a positive of less than two plus and no repeat examination was possible ;
- the second examination was negative.

The criteria for placing a case in the positive group were thus made stringent, and the percentage positive in the groups listed in Table I may tend to underestimate the incidence of serological syphilis in the sections of the population examined. It was felt, however, that the assessment should err on the side of underestimation to offset the possible occurrence of false positive reactions in non-syphilitic cases. It was felt that this factor of false positive reactions was unlikely to be greater in Ceylon than in other countries. There had been little or no active malaria during the previous 5 years in the groups surveyed. The cases in Group 1(a) were specifically questioned on this point and the results suggested that malaria had not influenced the incidence of positive serological reactions (Table III).

Leprosy is not uncommon in Ceylon, but there is an active campaign against it and the local

TABLE III
SEROLOGICAL RESULTS IN GROUP 1(a) RELATED TO HISTORY OF MALARIA

Group 1(a)	Serological Result			
	Negative		Positive	
	No.	%	No.	%
Number Examined ..	957	100	43	100
History of Malaria	Yes	109	15	6
	No	652	85	29
No Record Available ..	196	20	8	19

doctors are experienced in its recognition. While the venepuncture was being carried out, the patient's arms were closely examined, and active cases of lepromatous leprosy would probably have been noted. No such cases were seen, however, and it is felt that this common cause of false positive reactions can be ruled out.

Short-lived febrile conditions, loosely diagnosed as influenza, seemed rather prevalent in Ceylon. Such fevers may have produced transient, false positive reactions but the titre would not be high and this factor has probably been eliminated by the criteria used in the classification of positive cases.

(2) **Clinical.**—It was possible to examine personally all the 34 men in Group 2(a) whose initial test was not negative. Five of these were subsequently classified as negative and in the 29 cases classified as positive, there was clinical and/or historical evidence of infection (Table IV).

TABLE IV
SEROLOGICAL RESULTS AND DIAGNOSIS IN GROUP 2(a)

Ceylon Police in Colombo Area		No.	Per cent.
Results	Negative at first test	533	94
	Positive at first and second test ..	29*	5.1
	Negative at second test	5	0.9
Total	Examined	567	100
*Diagnosis of Syphilis in 29 Positive Cases	Acquired { Under 2 years	6	21
	{ Over 2 years	11	38
	{ Latent	3	10
	Congenital	9	31

It was interesting to note that about one-third of the positive cases were examples of late congenital syphilis and that only three (15 per cent.) of the twenty cases of acquired syphilis were without clinical evidence of infection. The lower incidence of positive results in the police recruits (Group 2b) as compared with the Colombo police (Group 2a) may be explained reasonably by the age composition of the two groups, as Group 2(a) contained many men with many years of service.

Of the expectant mothers, those in Group 1(a) were studied in most detail, and the diagnoses reached in the 43 positive cases of this group are shown in Table V.

TABLE V
DIAGNOSIS IN GROUP 1(a)

Diagnosis		No.	Per cent.
Syphilis	Acquired { Early (under 2 years)	14	32.6
	Latent	14	32.6
	Congenital Late	1	2.3
Yaws	Late	4	9.3
Untraced or Unclassified		10	23.2
Total		43	100

Analysis of the previous obstetric histories (Table VI) showed that the serologically positive group had experienced a greater foetal loss than the negative group; this could be explained by the assumption that the positive serological reactions were a true index of syphilitic infection, since in all respects other than foetal loss the positive and negative groups are comparable. This difference in foetal loss may also have another significance; had the positive results been due to former infection with yaws, such infection should not have influenced the foetal result during the child-bearing years.

TABLE VI
"FOETAL LOSS" IN MOTHERS AGED BETWEEN
21 AND 35 YEARS

Serology		Mothers	Abortions and Stillbirths	Child Deaths*
Positive ..	Total	40	20	34
	Average	1	0.5	0.85
Negative ..	Total	639	194	282
	Average	1	0.3	0.44

* All children who had died regardless of age or cause of death. A breakdown into infant and later mortality was not possible.

It was possible to re-visit one of the estates which was included in Group 1(d) and to examine clinically not only the expectant mothers giving positive serological results but also their husbands and previous children. At this particular estate, five out of 78 women tested had given a positive serological result. Further inquiry and clinical

examination yielded the following results:

Case 160.—This woman and her husband both had clinical evidence of late syphilis. Their two youngest children had clinical evidence of congenital infection.

Case 133.—This was probably an example of late yaws; the husband and two children appeared healthy.

Case 147.—This patient's history suggested that secondary syphilis had been clinically manifest about one year previously. Her husband had oral manifestations of late secondary syphilis.

Case 149.—This patient had signs of secondary syphilis. Her husband also presented signs of late secondary syphilis.

Case 173.—This woman had had a rash at the age of about 12 years, and had scars on her legs suggestive of old yaws. Her husband, interestingly enough, had the stigmata of congenital syphilis.

Conclusions

(1) In 6,067 expectant mothers attending antenatal clinics in Ceylon during 1951–52, serological tests for syphilis were positive in not less than 4 per cent.

(2) In 2,288 men in different occupational groups, the incidence of positive results varied but the average was about 4 per cent.

(3) When it was possible to re-examine serologically-positive cases, the history and/or clinical findings largely confirmed the serological result.

(4) From all the evidence collected, some of which is presented here, it is concluded that the serological results were reliable and provided a satisfactory, minimum estimate of the prevalence of syphilis in the population groups examined.

Summary

During the year ending August, 1952, serological tests for syphilis gave positive results in 368 (4 per cent.) of 9,094 persons examined in Ceylon. The group surveyed included 6,067 expectant mothers, 739 students, and 2,288 men belonging to certain occupational groups; they were otherwise unselected and were not complaining of any illness. Reasons are given for believing that this serological survey provides a satisfactory, minimum estimate of the prevalence of syphilis in the population examined.