

SEROLOGICAL TESTS FOR SYPHILIS*

An analysis of 35145 Tests done at the V. D. Training Centre Laboratory of Safdarjang Hospital, New Delhi

By

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The serological tests play a very important role in the diagnosis and management of syphilis. In the public health sphere it is an effective case finding measure. The introduction of quantitative tests has proved very helpful in assessing the progress of the cases following antisyphilitic treatment. Although treponemal tests have been introduced recently, the reagin tests like V. D. R. L. and Kahn Tests continue to be the most commonly performed STS⁷ in view of the easy Technique of performance as compared to the more cumbersome procedure and cost of the former.

An analysis of 24511 Serological Tests for Syphilis performed in the V. D. Training Centre Laboratory of the Safdarjang Hospital, New Delhi during 1955-57 was previously conducted and published by Sen and Rao⁹ (1959). The results of 35145 Serological Tests performed during the years 1958-61 are analysed in this paper.

The special feature of the V. D. Training Centre Laboratory is that it performs S. T. S. daily on blood specimens received from the V. D. Training Centre, In-patients and Outpatients of Safdarjang Hospital. Willingdon Hospital, C. H. S. S. Dispensaries in Delhi and New Delhi, Maternity and Child Welfare Centre under New Delhi, Municipal Committee and cases referred by other Medical Institutions and also by private practitioners. Thus a fairly good cross section of the population in the area is represented.

TABLE I

Showing the results of 35,145 Blood Serological Tests for Syphilis conducted in the V. D. Laboratory during 1958-61.

	Reactive	Partly reactive	Non-reactive	Not Tested*	Total
Number	2144	2514	30416	71	35145
Percent	6.1	7.2	86.5	0.2	100.0

* Not tested due to Haemolysis/contamination or insufficient sera.

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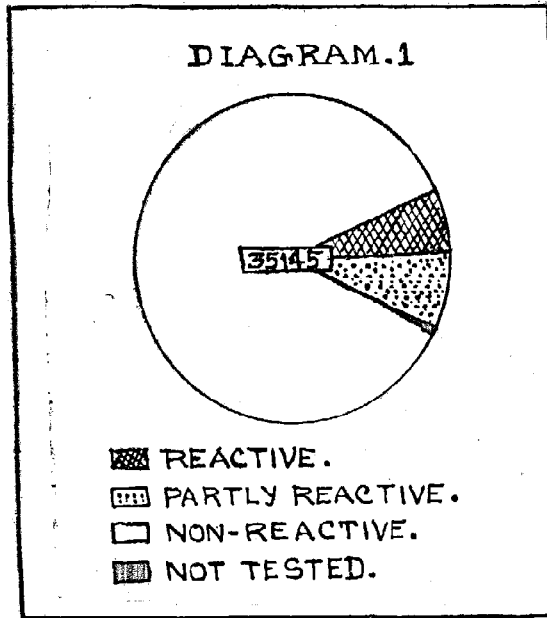


Table 1, gives the results of 35145 S. T. S. performed in the Laboratory during the period 1958-61. This includes all patients Irrespective of their clinical diagnosis. A sero positivity rate of 6.1% (Positive to all tests) was observed in the group. 7.2% of the total sera were found to be discrepant (Positive to any one test.)

TABLE 2

Comparative results of the present series and 1955-1957 series.*

Result	Previous Study (1955-57)		Present Study (1958-61)	
	No.	Percent	No.	Percent
Reactive	2378	11.07	2144	6.1
Partly Reactive**	1325	6.5	2514	7.2
Non Reactive	17802	82.8	30416	86.5
Not Tested	6	0.3	71	0.2
Total	21511	100.0	35145	100.0

* Test employed are the same i. e. Standard Kahn, Menicke (Slide Modification) and VDRL.

** Reacting to only one test.

Similar analysis of the S. T. S. performed during the year 1954-57 showed 11.07% and 6.2% as positive and discrepant sera respectively.

TABLE 3
Year wise analysis of results.

Year		Reactive	Partly Reactive	Non- Reactive	Not Tested	Total
1958	Number	587	683	7223	9	8502
	Percent	(6.9)	(8.0)	(85.0)	(0.1)	(100.0)
1959	Number	465	685	7020	9	8179
	Percent	(5.6)	(8.4)	(85.9)	(0.1)	(100.0)
1960	Number	605	507	7784	18	8994
	Percent	(6.7)	(6.5)	(86.6)	(0.2)	(100.0)
1961	Number	487	559	8387	39	9472
	Percent	(5.7)	(5.8)	(88.1)	(0.4)	(100.0)

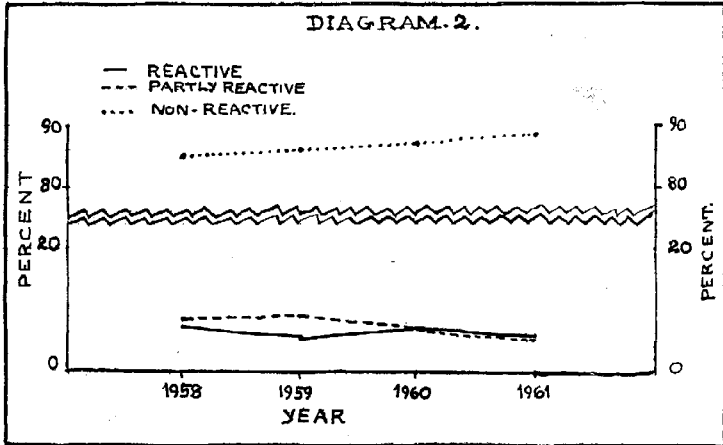
Table 2, shows the comparative statement of the results of STS performed during the years 1958-61 year wise. It can be seen from the above table that there is a progressive decrease in the percentage of Sero reactivity to any single test and in 1961, it came down to 11.5% compared to 14.9% in 1958.

TABLE 4
Source of samples tested during 1958-61

S. No.	Source	Reactive		Partly Reactive		Non- Reactive		Not Tested		Total No.
		No.	%	No.	%	No.	%	No.	%	
1.	V. D. T. Centre	1376	10.3	1678	12.5	10335	87.1	8	0.1	13397
2.	Safdarjang Hospital	419	4.2	418	4.2	9204	91.5	10	0.1	10051
3.	Willington Hospital	219	3.9	267	4.7	5098	90.8	42	0.7	5626
4.	Contributory Health Service Dispensaries	76	2.6	85	2.9	2746	94.3	5	0.2	2912
5.	Antenatal Clinics	27	1.0	44	1.6	2778	97.2	4	0.02	2853
6.	Others	27	8.8	22	7.2	255	83.3	2	0.7	306
Total		2144	6.1	2514	7.2	30416	86.5	71	0.2	35145

The sources of samples tested are indicated in table 3. 22.5 percent of the samples from the V. D. Training Centre were found to be Reactive to any one single test. This is in conformity with the results in the previous study. The patients in the present study consist of patients who attended the V. D. Centre either voluntarily or were referred by different sources either for exclusion or for confirmation of syphilis. A large number of treated cases of Syphilis who were followed by repeat blood tests during surveillance period, have also been included in the above group.

In the Hospital groups, a percentage of 8.5 was found to be Sero-reactive. Even assuming that there was an element of suspicion for referring patients for STS, this high percentage of reactivity seems to reflect the high prevalence of



syphilis in this area. An average proportion between syphilis, gonorrhoea and chancroid was found as 1 : 2 or 3 : 4 or 5 and it can be presumed that there is a high proportion of Venereal Diseases including Gonorrhoea and Chancroid, in this area.

A high rate of 5.5% was observed among the patients from Contributory Health Service Scheme Dispensaries.

Another significant finding was that 71 sera in 2853 cases (or 2.6 per cent) have been observed as Sero-reactive in the antenatal patients.

TABLE 5

Comparison of results of different STS performed during 1958-61

S. No.	Name of Test	Reactive		Partly Reactive		Non-Reactive		Total	
		No.	%	No.	%	No.	%	No.	%
1.	VDRL	4487	13.0	—	—	30084	87.0	34571	100.0
2.	MEINICKE	2757	9.8	109	0.4	25316	81.8	28182	100.0
3.	KAHN	1771	5.1	405	1.2	32395	93.7	34571	100.0

Table 5 shows the comparison of results of Meinicke slide, standard Kahn (Slide flocculation) and VDRL test using cardiolipin antigen. The Meinicke test was discontinued due to the difficulty in procuring antigen from abroad. The cardiolipin antigen was obtained from the Antigen Production Unit, Calcutta.

The VDRL, Meinicke and Kahn Showed reactivity rates of 13.0, 10.2% and 6.3% respectively.

The results of the present analysis are in line with the previous study viz. that VDRL is most sensitive, Kahn the least sensitive and Meinicke in between the two.

Zambrano F. P.¹³ in his study "Comparative Serologic Study with the Kahn Standard and VDRL" (1956) on 4627 cases reported 8% and 5% reactive sera by VDRL and Kahn respectively.

TABLE 6
MKR & VDRL

No. of sera 28490

		VDRL			
		P	PR	N	Total
M K R	P	2648	108	1056	3812
	PR	—	—	3	3
	N	109	4	24562	24675
	Total	2757	112	25621	28490

TABLE 7
MKR & KAHN

No. of Sera 28182

		KAHN			
		P	PR	N	Total
M K R	P	1838	5	77	1920
	PR	7	—	16	23
	N	912	104	25223	26239
	Total	2757	109	25316	28182

TABLE 8
VDRL & KAHN

No. of Sera 34571

		KAHN			
		P	PR	N	Total
V D R L	P	2174	—	55	2229
	PR	13	2	8	23
	N	2296	2	30021	32319
	Total	4483	4	30084	34571

The correlation studies between MKR, VDRL, and KAHN & VDRL and KAHN are included in Tables 6, 7 and 8 respectively.

The disagreement between the three tests were 4.5%, 4.0% and 7.0% respectively and is similar to results in the study conducted in 1959.

According to Mungale M. D.⁵ et al in a study on "Sero-Reactivity in Bombay" (1958) the disagreement between MKR & KAHN were 5.5% and 9.7% respectively. These figures are rather high compared to our findings.

DISCUSSION

The importance of performing at least two serological tests for Syphilis based on detection of reagin was emphasized by various authors^{3,5,6,8,9} in view of the fact that the diagnosis of late and latent syphilis should not be made by performing single STS and a persistently positive reaction with a high titre is to be considered as evidence of syphilis infection.

Anti-Syphilitic treatment was given in a considerable number of late and early latent syphilis cases though Meinicke and Kahn were non-reactive and VDRL reactive with a titre of 1 : 4, when a history of Pre-marital or extramarital exposure was involved. This highlights the importance and utility of performing at least two STS to exclude the omission of treatment of latent Syphilis cases.

In our present study an over all reactivity rate of 13.3% (including Reactive and Partly reactive) was observed with any single test based on 35145 sera. This includes fresh cases, old cases, treated cases and those referred for routine check up etc.

In the hospital group of patients a reactivity rate of 8.5 percent was detected which is much higher compared to Bell. R-Edward in a study on "The value of routine STS on Hospital Admission (1959), found 141 sera (or 1.5%) reactive in 13,372 sera. The value of routine STS on hospital admissions where there is a relative high prevalence of syphilis is a very useful case finding measure. From studies already conducted, it was found by Tampi and Rao¹⁰ that most of the patients fall between the age groups 18 to 47 which is a sexually active period and as such all persons between the ages 18 to 47 should be advised a routine STS at the time of their first admission in the Hospitals.

Mungale et al⁵ in a study on "Sero-reactivity for syphilis in Bombay" (1958) based on 104317 sera concluded that the high incidence rate of Syphilis (21.22%) in this area continues to be problem calling for stringent Public Health Legislation, anti-V. D. campaigns and social work.

Routine blood Testing programmes in selective groups of population in this areas will also be helpful to detect sero-reactors.

In the present study, 2.6% sera were found to be reactive in the 2853 total sera of ante-natal cases. In 1949, Lady Harding Hospital for women in New Delhi reported a reactivity rate of 4.5 in Maternity cases. The Himachal Pradesh V. D. Organisation found 2.06 of Reactors on 1362 pregnant women who were tested for STS, during the year 1960.

In 1957, the Municipal Corporation of Delhi found 12% Sero reactivity among women in Ante-natal clinics.

The findings tend to show that there is still a significant reservoir of infection in the Ante-natal segment of the population and emphasises the need for routine STS in all the Antenatal Clinics. This would help in bringing down the incidence of congenital Syphilis. No attempt is made in this study to correlate the serological results and clinical status of patients. This aspect is proposed to be taken up in a separate paper.

SUMMARY

The analysis of the results of 35,145 Serological Tests for syphilis done in the Laboratory of the V. D. Training Centre, Safdarjang Hospital at New Delhi during 1958-61 was made bringing out the following findings :

1. A sero-reactivity rate of 6.1 to all tests and 7.2 as partial reactors (Reactive or doubtful in any) in the total sera have been observed.
2. 22.8% sera were reactive from the sera received from the V. D. Training Centre of the Safdarjang Hospital.
3. A reactivity rate of 8.5% was observed among the patients referred from Hospitals in New Delhi.
4. 5.5% sera were found to be reactive from the people referred by C. H. S. Dispensaries.
5. The Ante-natal sero reactivity rates was 2.6%.
6. Of the three tests; VDRL is the most sensitive, Kahn is the least sensitive and Meinicke in between the two.

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REFERENCES

1. Annual Reports of the V. D. Training Centre, 1958, 1959, 1960 & 1961.
2. De Kodav, A. P. "The role of the Laboratory in the diagnosis of V. D. J. Philippine M. A. Manila 33: 159-164, March, 1957.
3. Bell, R. Edward: The value of routine STS on Hospital admissions—Amer. J. Clin. Path. Baltimore: 32: 521-525. Dec. 1959,

4. Leiby M. George: "Proposal for the control of VD in India" WHO No. Int.VD/28 et. 13th Jun., 1950 (Unpublished Document).
5. Mungale, M. D., Jhala H. S. & Welinkar W. N.: Sero-reactivity for Syphilis in Bombay, Brit. J. of V. D., London 34: 113-117 June, 1958.
6. Porter, L. Winder: Serological Tests for Syphilis Delaware 1 ed. J. Willington. 31: 23-25 Jan. 1959.
7. Rajam R. V. Inter-Laboratory evaluation of STS in India. Bull. WHO Geneva 19: 995-1040, No. 6, 1958.
8. Roshan, Paul D.: A plea for Blood Tests for Syphilis M. Sc., Philadelphia 2: 47-48 Oct. 25, 1957.
9. Sen Sukumar, Rao M. S.: Analysis of 21, 511, Blood STS. Indian Jr. of Dermatology and Venereology 25: 4 Oct.-Dec. '59.
10. Tampi R. B. and Rao M. S.: A preliminary study on Age and Sex Distribution in V. D. Indian Jr. of Dermatology and Venereology. Bombay 22-4 Oct.-Dec. 1956.
11. Teague, Russell E. Present status of STS J. Kentucky M. A. Lousive No. 56: 116 Feb., 1958.
12. U. S. P. H. S. current literature on V. D. 1957, 1958, 1959.
13. Zambrano, Faustino P. Comparative Serological study with the Kahn Standard and VDRL Current literature on V. D., U. S. P. H. S., 1956.

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