

Recent Trends of Syphilis Prevalence in Normal Population in Korea—1990

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From January to December of 1990, we have evaluated VDRL reactivity among 17,142 apparently normal Korean adults which consisted of 9,151 blood donors in Seoul area, 2,682 pregnant woman delivered at Severance Hospital, Yonsei University and 5,309 physical examinees. The VDRL-positive rates were 0.3% in the blood donors, 0.1% in the pregnant women and 0.8% in the physical examinees but the rates were higher in the age group of 50 years or older. The VDRL titers were below 1:2 in 94% of the VDRL-positive pregnant women and physical examinees. From the comparison of the results obtained by the present author group since 1977, i.e., 2.5% in 1977, 1.1% in 1981, 0.6% in 1986 and 0.4% in 1990, it is evident that the prevalence of syphilis in Korea is continually decreasing.
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According to the reports made during the past 3 decades on positive rates of Serologic Test for Syphilis(STS) in Korea, the prevalence rates varied between 2.8 and 7.4% in the 1960's¹⁻⁴ and decreased to between 1.4 and 3.1% in the 1970's.⁴⁻⁸ The rates further decreased to between 0.6 and 2% in the 1980's.⁹⁻¹² However, these studies were performed by different authors in various population groups, areas and

periods and thus are not suitable for comparison of the changes in the incidence of syphilis in Korea.

We have selected blood donors, physical examinees and pregnant women as the population group which is identical to the studies done every 4 or 5 years by the present author group. This study was performed utilizing VDRL test in order to find out if the decreasing trend of syphilis prevalence, i.e., 2.5% in 1977, 1.1% in 1981, and 0.6% in 1986, is still continuing.

MATERIALS AND METHODS

Subjects

Apparently normal Korean adults, 17,142 in number, were examined from January to De-

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cember, 1990. Of the study population, 9,151(7,063 men, 2,088 women) were blood donors in Seoul area, 5,309(3,317 men, 1,992 women) were physical examinees examined at Severance Hospital, Yonsei University, and 2,682 were pregnant women delivered at Severance Hospital, Yonsei University.

Serologic tests

All the subjects were screened by VDRL test. The VDRL titration was performed on VDRL-

positive pregnant women and physical examinees.

The VDRL test was done according to the Manual of Tests for Syphilis.¹³

RESULTS

VDRL screening test

Of the 17,142 study population, 75(0.4%) were positive in the VDRL screening test(Table 1) and the male showed higher positive rate(0.

Table 1. Subjects tested for STS and their reactive rates

Subject	No. of persons tested(M/F)	No. of persons reactive in VDRL(M/F)	% reactive(M/F)
Blood Donors	9,151(7,063/2,088)	28(22/ 6)	0.3(0.3/0.3)
Physical Examinees	5,309(3,317/1,992)	43(33/10)	0.8(1.0/0.5)
Pregnant Women	2,682(0/2,682)	4(0/ 4)	0.1(0.0/0.1)
Total	17,142(10,380/6,762)	75(55/20)	0.4(0.5/0.3)

Table 2. Results of the VDRL test in blood donors, physical examinees and pregnant women

Age	No. reactive/No. tested(%)			
	Blood donors	Physical examinees	Pregnant women	Total
20-29	8/5,448(0.1)	4/1,301(0.3)	3/1,728(0.2)	15/8,477(0.2)
30-39	6/2,726(0.2)	6/2,040(0.3)	1/916(0.1)	13/5,682(0.2)
40-49	7/809(0.9)	22/1,150(1.9)	0/38(0.0)	29/1,997(1.5)
50 or older	7/168(4.2)	11/818(1.3)		18/986(1.8)
Total	28/9,151(0.3)	43/5,309(0.8)	4/2,682(0.1)	75/17,142(0.4)

Table 3. VDRL titers in pregnant women and physical examinees

VDRL titer	No. of persons reactive in VDRL (Pregnant women/Physical examinees)
1:1	27(1/26)
1:2	17(2/15)
1:4	1(0/1)
1:8	1(0/1)
1:16	0(0/0)
1:32	1(1/0)
Total	47(4/43)

5%) than the female population(0.3%). In the 9,151 blood donors, 28(0.3%) were VDRL-positive(Table 1). Among the 2,682 pregnant women, 4(0.1%) were VDRL-positive and all of them were between the age of 20 and 39 (Table 1, 2). In the 5,309 physical examinees, 43(0.8%) were VDRL-positive(Table 1). The VDRL-positive rates of the blood donors and physical examinees were commensurate with their age and the overall VDRL positive rates were 0.2% in the 20's and 30's but 1.5% in the

40's and 1.8% in the 50 or older age group (Table 2).

VDRL titration test

VDRL titrations were evaluated in 47 subjects. Forty-four subjects (94%), 3 pregnant women and 41 physical examinees, showed titers of 1:2 or less. Only 3,1 pregnant women and 2 physical examinees, of the 47 subjects showed titers of 1:4 or higher (Table 3).

DISCUSSION

The widespread use of penicillin after the second world war resulted in the dramatic decrease in the incidence of syphilis throughout

the world. Since the 1960's, many studies on the syphilis prevalence in normal Korean adults have been reported. However, due to the variability in the population groups, areas and periods of research in those studies, it was hard to compare and analyze the results. Nevertheless, the STS-positive rates in apparently normal subjects were high in the 1960's, 7.4% of 337 young males tested in 1962.¹ The positive rates showed steady decrease after then; 2.8% of 1,580 miners in 1965,² 4.7% of 1,527 soldiers in 1966,³ 2.0% of 1,046 healthy young males in 1974,⁵ 1.49% of 2,007 physical examinees for employment between 1974 and 1979,⁶ 1.4% of 23,886 physical examinees for employment between 1978 and 1981⁹ and 2.0% of 5,413 VISA

Table 4. Results of the VDRL test in blood donors by the present author group

Year	No. tested	No. reactive	% reactive	Reference
1977-1978	6,220	144	2.3	Lee et al. (1979)
1981	8,501	88	1.0	Lee et al. (1982)
1986	6,097	33	0.5	Kim et al. (1988)
1990	9,151	28	0.3	Present study

Table 5. Results of the VDRL test in VISA applicants or physical examinees by the present author group

Year	No. tested	No. reactive	% reactive	Reference
1977-1978	3,393	98	2.9	Lee et al. (1979)
1981	2,753	42	1.5	Lee et al. (1982)
1986	5,136	40	0.8	Kim et al. (1988)
1990	5,309	43	0.8	Present study

Table 6. Results of the VDRL test in pregnant women delivered at Severance Hospital, Yonsei University by the obstetrics group and the present author group

Year	No. tested	No. reactive	% reactive	Reference
1963	643	40	6.2	Choe et al. (1976)
1967	1,079	41	3.8	"
1971	2,722	58	2.1	"
1975	805	14	1.7	"
1981	2,588	20	0.8	Lee et al. (1982)*
1986	1,883	11	0.6	Kim et al. (1988)*
1990	2,682	4	0.1	Present study

* : Present author group

Table 7. Results of the VDRL test in apparently normal Korean adults by the present author group

Year	No. tested	No. reactive	% reactive	Reference
1977–1978	9,613	242	2.5	Lee et al. (1979)
1981	13,842	150	1.1	Lee et al. (1982)
1986	13,116	84	0.6	Kim et al. (1988)
1990	17,142	75	0.4	Present study

applicants between 1981 and 1984.¹¹ The tendency to decrease was reversed temporarily at the end of 1970's when the positive rate was 3.1% in 18,151 physical examinees for overseas employment between 1978 and 1979.⁸

We have evaluated VDRL-positive rates in similar areas with similar population groups and methods as the previous studies in order to accurately compare the results. In 1977 through 1978,⁷ VDRL-positive rates were 2.3% in 6,220 blood donors (Table 4) and 2.9% in 3,393 VISA applicants (Table 5). In 1981, 1.0% of 8,501 blood donors, 1.5% of 2,753 VISA applicants and 0.8% of 2,588 pregnant women (Table 6) were VDRL-positive¹⁰ and in 1986, 0.5% of 6,097 blood donors, 0.8% of 5,136 physical examinees and 0.6% of 1,883 pregnant women showed positive results.¹² In this study, we got the positive rates of 0.3% in 9,151 blood donors, 0.8% in 5,309 physical examinees and 0.1% in 2,682 pregnant women (Table 1).

Table 3 shows that infectivity of most of the subjects evaluated by the VDRL titration was almost nil with the titers below 1:2. Only 3 of the subjects showed titers above 1:4.

As can be seen in Table 4, decreasing trend of VDRL-positive rates was evident in blood donors and in the 20–29 year-old age group, the positive rate decreased to 0.1% in 1990 (Table 2) as compared with 2.2% from 1977 to 1978,⁷ 0.9% in 1981¹⁰ and 0.3% in 1986.¹² According to the study done by Choe et al.,⁴ VDRL-positive rates in pregnant women delivered at Severance Hospital, Yonsei University decreased between 1963 and 1975 (Table 6). Other data

reported by the present authors also showed steady decrease in the incidence of VDRL-positive pregnant women as in the case of blood donors (Table 6). The prominent decrease in the VDRL-positive rates in young age groups, e.g., blood donors and pregnant women, implies that the occurrence of new patients is decreasing. The VDRL-positive rates of physical examinees in the 1980's were decreased compared to that in the 1970's but the positive rate in 1990 was same as that in 1986 (Table 5). Of the 43 VDRL-positive physical examinees, 33 (77%) were in their 40's or over and 10 (23%) were between the ages of 20 and 39 (Table 2). The higher rate of VDRL-positive examinees in the older age groups was probably due to a cumulative effect, which resulted in the same positive rates in 1986 and 1990 although the overall incidence is decreasing.

In summary, the VDRL-positive rates among apparently normal Korean adults showed steady decrease since the mid 1970's (Table 7) but the rate is still higher than that of developed countries. Future studies should be undertaken in similar population groups, areas and periods with identical methods in order to accurately compare and obtain reliable results.

REFERENCES

1. Kim JD, Lew J : *Syphilis among the prostitutes and a new "Test Plan" for the serologic diagnosis of syphilis*. *J Kor Med Assoc* 6:1143–1152, 1963.
2. Kim YL, Kim SK, Lee JM : *The result of serologic tests for syphilis among healthy young men*

- in Korea. Kor J Dermatol* 4:1–6, 1965.
3. Kim ES : *Clinical and statistical observation of syphilis of ROKFV soldiers. Kor J Public Health* 4:69–73, 1967.
 4. Choe YC, Kay CW, Yang YH, Chung S, Kwak HM : *A clinical and statistical study for the syphilis in Korean pregnant women. Kor J Obstet Gynecol* 19:239–249, 1976.
 5. Lee CW, Lee YS, Kim JH : *Serologic survey for syphilis in Seoul. Kor J Dermatol* 13:1–4, 1975.
 6. Suh MS, Paik SA, Han JY, Park SO, Hahm JH, Kook HI : *Statistical consideration in syphilitic patients in Ewha Womans University Hospital. Kor J Dermatol* 15:409–413, 1977.
 7. Lee JB, Kim JH, Myung KB, Lee S : *Recent trends of syphilis prevalence in normal population in Korea. Kor J Dermatol* 17:203–206, 1979.
 8. Park SB, Youn JI, Lim SD : *Syphilis prevalence in young men who want overseas employment. Kor J Dermatol* 18:539–544, 1980.
 9. Han SJ, Lee CH : *Recent observation of syphilis and condyloma acuminatum. Kor J Dermatol* 20:407–411, 1982.
 10. Lee JB, Lee S, Lee HE, Song KS : *Recent trends of syphilis prevalence in normal population in Korea—1981. Kor J Dermatol* 20:537–543, 1982.
 11. Kim DH, Joung SW, Park JH : *Statistical analysis of serologic test for syphilis in normal population(1981–1984). Kor J Dermatol* 24:254–258, 1986.
 12. Kim YA, Lee JB, Lee MG : *Recent trends of syphilis prevalence in normal population in Korea — 1986. J Kor Med Science* 3:13–17, 1988.
 13. CDC : *Manual of tests for syphilis. Public health Service, Atlanta, GA, 1969.*