

Conjugal Syphilis

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Background: The infection rate of syphilis in married couples has been reported by a few investigators during the 1940s. However, studies on recent trends of that particular aspect of syphilis in married couples have not yet been done.

Objective: We therefore studied the infectivity of *T. pallidum* and recent trends of conjugal syphilis by observing the spouses of patients with untreated syphilis.

Methods: Couples married for more than 1 year who visited Yonsei Medical Center from 1983 to 1990 for syphilis were entered into this study. We observed the infection rate among spouses of 224 index patients (defined as, between husband and wife, the one who was the first to be diagnosed to have syphilis) who were not treated for syphilis. Syphilis was diagnosed on the basis of physical examination, history of extramarital sexual contacts, and the results of VDRL, TPHA, FTA-ABS, and 19S(IgM)-FTA tests.

Results: Fifty-six wives (48%) of 117 male index patients and 50 husbands (47%) of 107 female index patients had been infected at the time of examination. Among the 224 couples, 106 (47%) were both infected and in 118 (53%), only either husbands (27%) or wives (26%) were infected. Two spouses (50%) of the 4 first incident patients with primary syphilis, 9 (53%) of 17 with secondary syphilis and 23 (72%) of 32 with early latent syphilis were infected at the time of examination.

Conclusion: From our results showing the low infection rates among married couples, even in early syphilis when the infectivity is high, it can be deduced that *T. pallidum* has only a low infectivity. (Ann Dermatol 6:(1) 37-41, 1994)

Key Words: Conjugal syphilis

Syphilis is an infectious disease caused by *Treponema pallidum* and it may occur as an acquired form, which is classified into early and late syphilis, by sexual contacts and congenital form by transplacental transmission¹. Early syphilis is further classified into primary, secondary and early latent syphilis, and late syphilis into tertiary and late la-

tent syphilis.

With the advent of penicillin, world-wide prevalence of syphilis has markedly decreased. In Korea, VDRL positive rates in the general population have decreased from 2.5% (1977) to 1.1% (1981), 0.6% (1986), and 0.4% (1990)^{2,5}. Despite the rapid decrease of the positive rates, syphilis in Korea is still more prevalent than in European and North American countries.

Infectivity of syphilis is high in early syphilis but is nearly absent in late syphilis. Morton⁶ reported that even with repeated sexual contacts with early syphilitics, the infection rate was only 50-60%, which is low in comparison to other sexually transmitted diseases such as gonorrhea or non-gonococcal urethritis.

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Conjugal syphilis represents the transmission of syphilis between husband and wife. The infection rate of conjugal syphilis has been reported by a few investigators during 1940s. O'Leary and Williams⁷ reported infection rate of 46% in 1,175 couples, and Klingbeil and Clark⁸ reported infection rate of 57.1% in 226 couples. Our aim was to reveal the recent trends of conjugal syphilis and to study the infectivity of *T. pallidum* by observing the marital partners of index patients with untreated syphilis.

MATERIALS AND METHODS

Among the syphilis patients who visited the Yonsei Medical Center from 1983 to 1990, 224 patients showing seropositivity on their first visit with no history of treatment and married for more than 1 year were selected. The index patient was defined as, between husband and wife, the one who was the first to be diagnosed to have syphilis on initial examination. Spouses of the index patients who have had active sexual relationship with the index patient for more than one year previous to the first examination were observed for the infection rate of syphilis. Any attempts to assess the frequency of sexual contacts between the index patients and their spouses were considered impractical. The first incident patient was defined as, between husband and wife, the one who was originally infected with syphilis.

Syphilis was diagnosed on the basis of physical examination, history of extramarital sexual contacts, and the results of VDRL, TPHA, FTA-ABS and 19S(IgM)-FTA tests. Spontaneously healed syphilis was diagnosed as, in the absence of history of treatment for syphilis, positive results to the VDRL, TPHA, and FTA-ABS tests, but negative result to the 19S(IgM)-FTA test⁸.

RESULTS

Clinical stages of syphilis in 224 index patients and their spouses

Four spouses of 6 primary (70%), 17 spouses of 25 secondary (68%), 16 spouses of 25 early latent (64%), 14 spouses of 45 late latent (31%), 39 spouses of 87 undetermined (latent-duration unknown) (45%), and 16 spouses of 36 spontaneously healed index patients (44%) with syphilis were

infected (Table 1).

Clinical stages of syphilis in 224 couples

Among the 448 persons, infected males and females were 167 and 163, respectively, totalling 330 (74%). It can be seen that there were 16 (4%) primary, 28 (7%) secondary, 50 (11%) early latent, 58 (13%) late latent, 118 (26%) undetermined (latent-duration unknown), 50 (11%) spontaneously healed, and 10 (2%) adequately treated syphilis, and 118 (26%) nonsyphilitics (Table 2).

Infection rate in the spouses of the index patients

Fifty-six wives (48%) of 117 male index patients and 50 husbands (47%) of 107 female index patients had been infected at the time of examination. There were no differences in the infection rates between husbands and wives ($p > 0.05$) (Table 3).

Infection status in 224 couples

Of the 224 couples, 106 (47%) were both infected and in 118 (53%), only either husbands (27%) or wives (26%) were infected (Table 4).

Infection rate in the spouses of the suspected first incident patients with early syphilis

Two spouses (50%) of the 4 first incident patients with primary syphilis, 9 (53%) of 17 with secondary syphilis and 23 (72%) of 32 with early latent syphilis were infected at the time of examination (Table 5).

DISCUSSION

Syphilis is an infectious disease caused by *T. pallidum*, which penetrates intact skin and mucous membrane but more easily enters the body through microscopic or bigger defects. *T. pallidum* is very sensitive to heat, soap, and weak disinfectants¹.

By investigating contacts of primary and secondary syphilis, it has been shown that the disease is less infectious than gonorrhea or nongonococcal urethritis. Morton⁶ reported the infection rate of sexual partners who had repeated sexual contacts with early syphilitics. Among the partners, only 50-60% developed signs of early infection.

Table 1. Clinical stages of syphilis in 224 index patients and their spouses

Clinical stages in index patients ^a	Clinical stages in spouses of index patients							Total	
	P	S	EL	LL	UD	SH	T		NS
Primary	2		1	1				2	6
Secondary	5	2	9		1			8	25
Early latent		1	11	1	2		1	9	25
Late latent	1			8	1	3	1	31	45
Undetermined	2		4	1	22	4	6	48	87
Spontaneously healed ^b				2	5	7	2	20	36
Total	10	3	25	13	31	14	10	118	224

^a Index patients: Defined as, between husband and wife, the one who was the first to be diagnosed to have syphilis at the initial examination.

^b Patients who were not treated for syphilis, but reactive in the TPHA and FTA-ABS tests, and/or VDRL test, and nonreactive in the 19S(IgM)-FTA test.

P: Primary; S:Secondary; EL: Early latent; LL:Late latent; UD:Undetermined(latent-duration unknown)
SH: Spontaneously healed; T:Adequately treated; NS:Nonsyphilitics(not infected)

Table 2. Clinical stages of syphilis in 224 couples

Clinical stages	Male	Female	Total (%)
Syphilitics	167	163	330 (74)
Primary	7	9	16 (4)
Secondary	16	12	28 (7)
Early latent	26	24	50 (11)
Late latent	35	23	58 (13)
Undetermined ^a	54	64	118 (26)
Spontaneously healed ^b	24	26	50 (11)
Adequately treated	5	5	10 (2)
Nonsyphilitics ^c	57	61	118 (26)
Total	224	224	448(100)

^a Latent-duration unknown

^b Patients who were not treated for syphilis, but reactive in the TPHA and FTA-ABS tests, and/or VDRL test, and non reactive in the 19S(IgM)-FTA test

^c Not infected spouses of index patients

Table 3. Infection rate in spouses of 224 index patients

Sex of Index patients	No. of index pts	No. of partners infected (%)	No. of partners not infected (%)
Male	117	56 (48)	61 (52)
Female	107	50 (47)	57 (53)
Total	224	106 (47)	118 (53)

Index patient: Defined as, between husband and wife, the one who was the first to be diagnosed to have syphilis at the initial examination.

This is in contrast with a figure of 75% in gonorrhea. Von Werssowetz⁹ investigated 3,383 contacts with early syphilitic patients and only 48.5% were found to be infected with syphilis.

In western countries, homosexual males became an important factor in the transmission of *T. pallidum*¹⁰. This persisted in being a major contributing factor in western countries until recently when homosexuals have changed their sexual habits in response to the threat of AIDS. However, they are still an important epidemiologic factor in spreading the disease. The British Co-operative Clinical Group reported infection rates of syphilis by homosexual contacts as 42.4% in 1971 and 54% in 1977^{11,12}.

Who is responsible for the transmission of syphilis between husband and wife? Probably from the time of inception of the institution of marriage, transmission of syphilis from husband to wife and vice versa has occurred. Generally it is common to regard the husband as the guilty partner in Korea. Fiumara¹³ reported that the disease in males outnumbers that in females with a ratio of about 2.5 males to 1 female.

The infection rate of syphilis in married couples has been reported by a few investigators during the 1940s. But, as far as we know, studies on recent trends of infection rates of syphilis in married couples have not been done. O'Leary and Williams⁷ reported 46% infection rate in 1,175 married couples, and Klingbeil and Clark⁸ reported similar results of 57.1% in 226 married couples. In our study, 56 wives (48%) of 117 male index patients

and 50 husbands (47%) of 107 female index patients had been infected at the time of the examination. The overall infection rate in our result is 47%, which is very similar to those of previous studies.

Previous studies in the 1940s used only VDRL for the serologic test, but currently more specific and sensitive serologic tests for the diagnosis of syphilis are available such as TPHA, FTA-ABS, or 19S (IgM)-FTA test. In our study, we used VDRL, TPHA, FTA-ABS, and 19S(IgM)-FTA tests¹⁴. Despite the improvements in the serologic tests, infection rates in our result are very similar to those of the previous reports and the exact reasons are unclear. To make this question clear, a further study in a large scale group is obviously needed.

Schober et al¹⁵ reported that 42% of contacts with primary syphilis did not develop infection despite the fact that their partners had darkfield positive genital or anal lesions. Why is the infectivity of infectious syphilis so low? This shows our lack of knowledge on *T. pallidum* versus host relationships. This may be related with the infectivity of *T. pallidum*, immunity of the host, and the frequency of sexual contacts. Our study on the infection rate in the spouses of the suspected first incident patients with early syphilis revealed that two (50%) of the 4 first incident patients with primary syphilis, 9 (53%) of 17 with secondary syphilis and 23 (72%) of 32 with early latent syphilis were infected at the time of examination. Infection rates increased with the progression of stages of syphilis. This may be due to the increased number of sexual contacts with time and the ensuing increased chance of infection.

Table 4. Infection status of 224 couples

Infection status	No. of couples	%
Both infected	106	47
Male only	61	27
Female only	57	26
Total	224	100

Table 5. Infection rate in the spouses of the suspected first incident patients with early syphilis

Clinical stages of the first incident pts	No. of pts	No. of partners infected	%
Primary	4	2	50
Secondary	17	9	53
Early latent	32	23	72

First incident patient: Defined as, between husband and wife, the one who was originally infected with syphilis.

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