

Epidemiological studies on human trichomoniasis in Taegu, Korea*

Chong Yoon Joo, MD; Byoung Ki Lee, MD

Department of Parasitology, Keimyung University
School of Medicine Taegu, Korea

= 國文抄錄 =

大邱地域에 있어서 膾트리코모나스症의 疫學的 調査

啓明大學校醫科大學 寄生蟲學教室

朱 鍾 潤 · 李 秉 基

大邱地域에 居住하고 있는 女性들에 있어서 膾트리코모나스의 感染狀을 알기위해 1987年 3月부터 大邱市 ○○病院 外來 및 入院患者 509名 및 保健所에 登錄된 특수업태부 265名을 調査對象으로 選定하여 膾分泌物를 採取하여 塗抹檢査와 Asami 培地에 培養하여 調査 하였다.

總被檢者 774名中 膾트리코모나스 檢出率은 8.1%였으며, 感染者中 43名에서는 塗抹法과 培養法으로 本蟲을 모두 檢出할 수 있었으나, 16名에서는 培養法으로는 檢出되었으나 塗抹法으로는 檢出할 수 없었으며, 4名에서는 塗抹法으로만 檢出할 수 있었다.

家庭女性에서의 膾트리코모나스 感染率은 6.5%였으며, 이中 妊産婦에서는 4.4% 非妊産婦에서는 6.8%로 兩者間의 有意的差는 認定할 수 없었다.

年齡群別 感染率에 있어서는 30~34歲群에서는 8.6%로 가장 높았고, 20歲以下 年齡群과 50歲以上 年齡群에서는 檢出 되지 않았다.

保健所에 登錄된 특수업태부에서의 膾트리코모나스 檢出率은 11.3%였으며, 年齡群別로는 20~24歲群에서는 10.3%였고, 年齡이 많아질수록 그率도 增加하여 30~34歲群에서는 最高值 21.7%을 나타내었다.

以上の 成績은 1973年の 調査 成績에 비해 顯著히 減少되었으나 아직도 高率임을 알았다.

Introduction

Trichomonas vaginalis was first described by Donne(1836) in the purulent frothy leukorrhea of a woman presenting with vaginal discharge and genital irritation. Subsequently, the organism has been associated with non-gonococcal vaginitis and urethritis in man by many investigators.

The epidemiological, clinical observations and therapeutic techniques on *T.vaginalis* in Korea have

been drawn largely from patients in gynecologic, obstetrics and venereal disease clinics and institutions since Na's first reports on the incidence of trichomoniasis among female adult population in 1947.

Song(1956) studied the frequency of occurrence of *T.vaginalis* as well as the clinical aspects of the flagellate infections among women, and reported that trichomoniasis was one of the most common sexually transmitted diseases in Korea, with an estimated annual incidence of 10.8 per cent.

Chang and Choi(1976) also reported incidence ra-

* The results of this study were presented at the 29th annual meeting of the Korean Society for Parasitology in 1987.

tes of 35.1 per cent and 53.2 per cent of trichomoniasis in the foreigner's mistresses and local prostitutes respectively in the Korea.

In recent years, laboratory reports from hospitals in Taegu city indicate that there is a high incidence of infection with *T.vaginalis* among house-wives and local prostitutes. Also, in this area vulvar itching, vaginal discharge and urinary symptoms have been found to be very common complaints among in-and-out-patients in Obstetrics and Gynecology.

This study was therefore carried out to estimate the prevalence of trichomoniasis in the women of Taegu, and to compare with the sensitivity and reliability of the wet smear and culture method.

Materials and Methods

During the period of March-October in 1987, a parasitological survey was carried out to estimate the recent patterns of *T.vaginalis* among house-wives visiting the private clinics of Obstetrics and Gynecology, and local prostitutes registered with the venereal disease center in Taegu city.

A total of 774 women were examined, of whom 265 were local prostitutes and 509 were house-wives, including 68 pregnant and 441 non-pregnant women.

Vaginal discharge wet smear: Samples of vaginal exudates collected on cotton swabs were placed immediately in test tubes containing physiologic saline solution. A small drop of this mixture was put on the culture microslide, and confirmed by motile trichomonads on light microscopy.

Most of the specimens were examined immediately upon collection, the remainder within two hours.

Culture method: The medium used in this study has described by Asami(1954), and it is supposed to be the most suitable for cultivation of *T.vaginalis* from vaginal discharges. It is composed of 1.0g meat extract, 1.0g peptone, 0.1g cysteine hydrochloride, 0.5g glucose, 0.05g agar, 0.2ml of 0.1 per cent methylene blue solution, and 100ml distilled water.

The mixture was adjusted to pH 5.6, and 4ml each was pipetted into small test tubes for sterilization. Before use, 1ml of inactivated horse serum and stan-

dard doses of penicillin and streptomycin are added.

A drop of vaginal exudate in the tubes containing physiologic saline solution was immediately used to inoculate a culture by rinsing it in a small test tube of Asami medium. The approximate amount of inoculated culture was taken to the Parasitology laboratory and placed in a 37°C incubator for 3 to 5 days, and then examined once or twice at 24 hour-intervals after inoculation.

A small drop of the sediment in the bottom of the culture was placed on a slide glass without cover slip and examined in the same manner as a wet smear.

Analysis of data: The data were classified into pregnant, non-pregnant women, and prostitutes, and analysed statistically. The Chi-square test was used to compare the results among the three groups.

Results

The prevalence for *T.vaginalis* in pregnant and non-pregnant women by age groups is presented in Table 1. The overall infection rate for *T.vaginalis* in 509 cases was found to be 6.5 per cent. The demonstration rate among pregnant women was found to be 4.4 per cent and 6.8 per cent among non-pregnant women. There was no significant difference in the rate of infection between the pregnant and non-pregnant groups.

In age-specific rate of infections, it was found to be 6.7 per cent in the 20-24 year age group and 5.0 per cent in the 25-29 year age group. The rate subsequently increased and reached a maximum of 9.0 per cent in 30-34 year age group, after which it remained around 8.0 per cent.

Table 2 gives the infection rate of *T.vaginalis* in the group of the local prostitutes in the vicinity of Taegu city. Of the 265 individuals examined, 11.3 per cent of the prostitutes were infected with flagellates.

The patterns of the infection rate by age groups were appreciably varied: 10.3 per cent in the 20-24 year age group and 10.6 per cent in the 25-29 age group. The rate increased abruptly and reached a

Table 1. Prevalence of *Trichomonas vaginalis* among housewives in Taegu city, Korea(1987)

Age group (Year)	Pregnant women		Non-pregnant women		Total	
	No. examined	Percent positive	No. examined	Percent positive	No. examined	Percent positive
-19	0	0		0	1	0
20-24	11	9.0	19	5.3	30	6.7
25-29	39	0	141	6.4	180	5.0
30-39	15	13.3	97	8.2	112	9.0
35-39	1	0	57	8.8	58	8.6
40-44	2	0	51	5.9	53	5.7
45-49	0	0	48	8.3	48	8.3
50-	0	0	27	0	27	0
Total	68	4.4	441	6.8	509	6.5

Table 2. Infection rate of *Trichomonas vaginalis* among local prostitutes in Taegu(1987)

Age group (Year)	No. examined	Percent positive
20-24	155	10.3
25-29	85	10.6
30-34	23	21.7
35-	2	0
Total	265	11.3

Table 3. Frequency of detection for *Trichomonas vaginalis* in 774 specimens by wet smear and culture method(1987)

Method	No. positive	Percent positive
Wet smear	47	6.1
Culture method	59	7.6
Wet smear & Culture method	63	8.1

maximum, 21.7 per cent, in the 30-34 age group.

The number of cases examined and the positive results of *T.vaginalis* demonstrated by two methods are shown in Table 3. A total of 774 cases were examined.

By the wet smear method 47 positive cases or 6.1 per cent were detected, whereas, by culture method there were 59 positive or 7.6 per cent.

In this instance there were four positive cases by wet smear method, but negative results by culture method. There was no significant difference between the results of wet smear and culture method, but results from culture method were higher than those by the wet smear.

The reported infection rate for *T.vaginalis* from housewives and local prostitutes in Taegu city in 1973 are compared with data in 1987 and listed in Table 4. In fact, there was a considerable decrease in the infection rate of the flagellates among the hou-

Table 4. Comparison of infection rates for *Trichomonas vaginalis* from housewives and local prostitutes in Taegu city, Korea in 1973 and 1987

Group	Chang et al.(1973)		Authors(1987)	
	No. examined	Percent positive	No. examined	Percent positive
House wives	634	21.9	509	6.5
Pregnant	313	21.1	68	4.4
Non-pregnant	321	22.7	441	6.8
Prostitutes	308	53.2	265	11.3

sewives and prostitutes examined. In the infection rate of *T.vaginalis*, of the 308 prostitutes examined in 1973, 53.2 per cent of the individuals were infected, while, only 11.3 per cent of 265 individuals examined in 1987. Similarly, a marked decrease in the rate of detection in both groups of housewives, pregnant and non-pregnant women, occurred between 1973 and 1987.

Discussion

Trichomoniasis is one of the most common sexually transmitted diseases in Korea today. Results from this study indicate that, of 265 consecutive prostitutes attending the Venereal disease center for sexually transmitted disease and 509 housewives visiting the private clinics of obstetrics and gynecology, 11.3 per cent and 6.5 per cent had positive cultures for *T.vaginalis*, respectively. In practice, this is no indication of the true prevalence among house-wives and local prostitutes in Taegu city because the individuals for this study are not adjusted for the proportion of the women belonging to each age, social situation, and socioeconomics.

In the previous report by Song(1956) *T.vaginalis* was found in 12.3 per cent in non-pregnant women examined, while in pregnant women only 7.9 per cent were found infected. The total number examined in his study was 809 and the overall infection rate was 10.8 per cent. He examined only wet smears and gram stained smears. Had cultural methods been used his rates would most probably have been higher. In another survey done by Chang et al.(1973), higher results were reported: the infection rate for flagellates among housewives was 21.9 per cent and 53.2 per cent among local prostitutes.

Our figures, however, show indication of diminution in *Trichomonas* infection among the female adult population of Taegu during the period of the past 15 years. There is good reason to believe that the diminution in *Trichomonas* infections is due to specific chemotherapeutic administration, with extensive public health education, gradual awakening and behaviour of the residents to protect themselves from

venereal diseases using such preventives as condoms and contraceptives, and attention to personal hygiene.

The patterns of age-specific rates of infection showed a tendency to be higher with an increase of age reaching a maximum of 9.0 per cent in the 30-34 year age group, but there was no case in those over the age of 50 years.

In the present study the prevalence of *T.vaginalis* during the sexually active and child-bearing ages(20-44 years) was 6.7 per cent and 11.3 per cent among housewives and local prostitutes, respectively. These figures for the house-wives are considerably less than those reported by Kim(1962), Chae(1965), and Chang and Choi(1976) for housewives, with high prevalence of 17.3 per cent, 26.6 per cent, and 22.7 per cent among women aged 20-39 years, respectively.

T.vaginalis infections in older individuals past menopause have received scant mention in the literature of Korea. The actual prevalence of the flagellate is not known, but a few reports indicate that the flagellate has been seen in women who passed the menopause(Kim, 1962; and Chu et al., 1974), although this study and Chang and Choi(1976) did not note any cases beyond the age of 50.

In general, it is known that accurate diagnosis is important when the epidemiology and other aspects of *T.vaginalis* are investigated and especially when the results of chemotherapy are evaluated.

In earlier studies for the diagnosis of *T.vaginalis*, Chintana et al.(1979) conducted a study on the diagnostic methods for *T.vaginalis* infections, and reported that the wet smear method gave 15.5 per cent positive, the Papanicolaou's smear 6.7 per cent and culture method 16.5 per cent, respectively.

They also commented that the wet smear and culture method were better than the papanicolaou's method. A similar result from three diagnostic techniques have been obtained by Burch et al.(1959), Wolinska(1959), Martin et al.(1963), Joo and Choi (1980).

From their studies on the reevaluation of its clinical presentation and laboratory diagnosis of *T.vaginalis*, Fouts and Kraus(1980) reported that although

Donne's wet mount test remained highly specific, the culture method would detect twice as many *Trichomonas* infections. Quite recently, Omer et al. (1988) carried out an evaluation of the laboratory diagnosis of vaginal trichomoniasis in Khartoum, Sudan, and reported that the culture method was the most sensitive. Also, Morton (1975) reported that the culture method was superior to wet smears.

In the present study, the culture method of the vaginal discharge detected 59 positive cases, and this percentage (7.6 per cent) was higher than that of wet smears (6.1 per cent). However, the best results were obtained by the employment of both wet smears and culture methods at the same time.

These findings indicate that the infection rate for *T. vaginalis* is now much less prevalent as compared with those in previous reports, and that a culture medium provides us by far the most accurate method of the presence of the parasites.

Summary

Recent patterns of *Trichomonas vaginalis* infections among women in Taegu city were studied during the period from March to October in 1987, and compared with the data reported previously in the same area.

The infection rate for *Trichomonas vaginalis* among housewives was 6.5 per cent with a prevalence of 4.4 per cent among pregnant and 6.8 per cent among non-pregnant women. In the age specific rate of infections, the rate progressively increased by age, reaching a maximum of 9.0 per cent in the 30-34 year age group.

The rate of infection with *Trichomonas vaginalis* among local prostitutes was 11.3 per cent and the age specific rate of infection showed the same patterns as housewives having their higher prevalence in the 30-34 years.

Compared with the previous reports in 1973, *Trichomonas vaginalis* infections are now much less prevalent.

A comparison of the sensitivity and reliability for the detection of *Trichomonas vaginalis* in this study

showed that the culture method was more sensitive than the wet smear, and that the employment of the wet smear and culture method at the same time gave the best results.

The results of this study generally indicate clear evidence that the infection rate of *Trichomonas vaginalis* among women in Taegu city are lower than those reported in 1973, due to the common use of specific chemotherapeutics in combination with extensive public health education.

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