Current Status of *Trichomonas vaginalis* Infection, a Sexually Transmitted Disease

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**Abstract:** *Trichomonas vaginalis* usually induces urethritis in men and vaginitis in women, but it may remain inapparent in some. We observed an inapparent infection lasting as long as 1,311 days in a male patient. *Trichomonas vaginalis* in vaginal secretion is detected microscopically, but urine must be cultured for detection. The detection rate of *Trichomonas vaginalis* in men between 1991 and 1998 was 0.7%, with an increasing tendency from 1999 onward to 6.1%. Metronidazole or Tinidazole is used for treatment. Partners should be treated simultaneously, but men respond better to treatment. *Trichomonas vaginalis* seems to live in the prostate or the seminal vesicle, its presence being assumed by its fructose decomposition.

**Key words:** *Trichomonas vaginalis*; Urogenital infections in male; Nongonococcal urethritis

**Introduction**

*Trichomonas vaginalis* (TV) is a pathogen for sexually transmitted disease (STD), is spread by men, causes vaginitis in women, and nongonococcal urethritis in men occasionally. Infections are sometimes inapparent or asymptomatic, and transient in men.

TV is a protozoa belonging to mastigophora. It is gourd shaped, has an undulating membrane and 3 to 5 flagella, is active under favorable conditions, and therefore easily identified microscopically (Fig. 1). Under unfavorable conditions, it becomes spherical or piriform, and immobile. In such a state, culture should be carried out so that it becomes mobile for identification.

Commercially available Nissui culture medium is used. If *Candida* is present, protozoa detection will be difficult. Instructions for culturing suggests microscopy on the seventh day, but a better result is obtainable on the 10th day if the number of protozoa is small.

The only statistic that teaches the percentage of TV detection from non-gonococcal urethritis is obsolete, and it is questionable whether non-gonococcal urethritis was caused by TV alone since there were no methods in those days for detecting *Chlamydia*, *Mycoplasma*, *Ureaplasma*, etc. The rate of inapparent infection...
among Japanese is also not known. The data on prisoners is available, but it is not applicable to the general population, since all the subjects have criminal records and different social backgrounds from the general public.\textsuperscript{2)}

The author attempted to detect TV from male in-patients, and found TV in less than 20\% of the married men (aged 20 to 40) who were scheduled for surgery. At that time, TV infection rate in women was also high, suggesting that women without grave symptoms have had sex prior to admission for small surgery such as removal of ureteral stones. In such patients, TV disappeared within 3 to 7 days, except for elderly patients. These facts suggest that there were two types of infections, extended and transient. On the other hand, TV was detected in less than 70\% of the husbands whose wives had TV infection, whereas it was detected in 100\% of the wives of the husbands with TV infection. It is thus assumed that TV is less likely to reside in men and more likely to induce permanent infection in women. There are no recent publications on the TV infection rate among Japanese women, but the rate is said to have decreased drastically.

If untreated, infections apparently continue in female patients even when they become older or have hysterectomy, whereas men are cured naturally or continue as inapparent infection. A prisoner had the infection lasting as long as for 1,311 days (Table 1).\textsuperscript{2)}

### Current Status

TV detection rate in men between January 1991 and December 1998 was 0.7\%, but it rose to 6.1\% between January 1999 and May 2001. Prior to the survey period, it was 3.43\% indicating that the transmission rate was quite low in the beginning of 1990s. This was the period of so-called AIDS shock in Japan, and the ratio seems to have risen as the public has recovered from the shock.

TV is detected by culture. Our method detects TV without fail if there are two or more live protozoa. We rarely test the partner, since

### Table 1 Period of *Trichomonas Vaginalis* Infection in Men (Study on prisoners)

<table>
<thead>
<tr>
<th>Period of infection (days)</th>
<th>Age</th>
<th>Period of infection (days)</th>
<th>Age</th>
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<tbody>
<tr>
<td>1,311</td>
<td>56</td>
<td>605</td>
<td>28</td>
</tr>
<tr>
<td>1,204</td>
<td>64</td>
<td>407</td>
<td>45</td>
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<td>1,140</td>
<td>35</td>
<td>400</td>
<td>32</td>
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<td>1,094</td>
<td>47</td>
<td>381</td>
<td>30</td>
</tr>
<tr>
<td>889</td>
<td>41</td>
<td>358</td>
<td>63</td>
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<tr>
<td>803</td>
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<td>793</td>
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<td>329</td>
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<tr>
<td>617</td>
<td>41</td>
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</tbody>
</table>

• 200–300 days Four (4) men  
• 100–200 days Five (5) men  
• Less than 100 days 12 men
patients visit our clinic because they have had an opportunity for contracting STD and usually have no permanent partner whom they would accompany to the clinic. Only occasionally, an asymptomatic partner comes to the clinic when she learns of TV infection.

Samples other than urine are used for detection, but semen samples are difficult to test as they seem to change pH of the culture. TV is often detected in urine after prostatic massage, but since fewer cases are diagnosed recently as chronic prostatitis, the number of examinations has also decreased. Five (1.5%) out of 335 samples tested positive. In one case, TV was detected in hydrocele testis fluid. Culture of hydrocele testis in adults revealed that one out of 18 tested positive.

TV is microscopically detected in women’s vaginal discharge, probably due to a greater number of infected protozoa than men, but is rarely detected in men’s urine sediments. When the centrifugal rotational speed exceeds 2,000 rpm, ciliums are detached, making determination difficult. Non-centrifuged urine samples are therefore more suitable as specimen. When TV is detected in a woman’s urine, her vagina is also infected. There is no case of infection of the bladder alone.

Treatments

Treating TV in men is simple, especially with oral agents. Those available in Japan are Metronitazole and Tinidazole; the former is administered at 500 mg/twice/day for 10 days or 1.0–1.5 g is single dosed. The latter is administered 400 mg/twice/day for 7 days or 2.0 g is single dosed. Recurrence occurs if the partner is infected. If TV is detected, the spouse should be treated simultaneously for the same period.

Local therapeutic agent such as vaginal tablet can be given to women concurrently with an oral agent. Generally speaking, it is more difficult to cure women and they are more susceptible to relapses. This may be attributable to more nutrients for TV present in the vagina. No recent data on the rate of cure for Japanese women is available.

Relapses often occur in women, but hardly in men. Women should be examined for relapse 1 to 4 weeks after treatment. Since TV infection is a STD, patients should be tested and treated for other pathogens if they tested positive for TV. Although no detailed study has been conducted on the time leading to onset, TV may be detected the next day of exposure. The period to onset for men is usually 10 to 14 days although it can be shorter if greater numbers of protosoma are present. No data is available for women. We therefore do not recommend testing other STDs immediately after TV detection. Timing depends on the time elapsed from exposure. An urethritis male patient should be tested for gonococcus or chlamydia trachomatis since they cause inflammation more easily. Treatment should be started with a potent drug, leaving treatment of TV to the last.

In men, TV may be resident in the prostate or the seminal vesicle. Resident mitotic proliferation occurs more easily in the male auxiliary genital organs. Rats were used for in vivo tests on extended viability and fructose containing culture for in vivo test. Fructose decreased with protozoa increase in the fructose containing culture.

The above going suggests that TV is viable on fructose as a nutrient source, and TV infection in male auxiliary genital organs can occur since fructose is present in the seminal vesicle and the prostate. This is evidenced by long-term inapparent infection and decreased fructose in the rat prostate inoculated with TV.

TV as a sexually transmitted disease was discussed urologically.

REFERENCES

2) Kawamura, N. and Kinoshita, H.: The inci-


