

Study on *Chlamydia Trachomatis* Infection among Students and Pregnant Women in Japan: A Step Toward Developing a Reliable Method for Sexual Behavior Study

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Department of Health Policy and Planning, Graduate School of International Health, The University of Tokyo Faculty of Medicine, Tokyo 113-0033, ¹Department of Public Health, Niigata University School of Medicine, Niigata 951-8122, ²Sendai National Hospital, Sendai 983-0045, ³Association of Preventive Medicine Miyagi Prefecture, Sendai 981-0942, and ⁴Yamagata University School of Medicine, Yamagata 990-9585

UMENAI, T., SAKANO, S., SUZUKI, H., MIZUTA, K., YANAGIYA, T., HIROI, M., KIKUCHI, H., NAKAMURA, H., MIURA, H. and HAMADA, A. *Study of Chlamydia Trachomatis Infection among Students and Pregnant Women in Japan: A Step Toward Developing a Reliable Method for Sexual Behavior Study.* Tohoku J. Exp. Med., 1999, 187 (2), 189-192 — 2450 sera from students and 5215 sera from pregnant women were examined for the presence of *Chlamydia trachomatis* (CT) antibody. CT antibody positive rates were less than 5% with the students and 24.5% with the pregnant women suggesting the latter is significantly higher than former. The results provided a base for discussing possibility of using CT infection as a reliable method for studying sexual behavior. ——— *C. trachomatis* infection; sexual behavior surveillance © 1999 Tohoku University Medical Press

Sexually transmitted diseases (STDs) have been increasing globally and *Chlamydia trachomatis* (CT) infection is the second top of STDs in the world (World Health Organization 1996). In view of above and other fact of ever increasing HIV infection worldwide (World Health Organization 1998), development of effective measures for STDs and HIV infection is the urgent concern in

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many countries in the world. To this end, development of reliable method for studying sexual behaviors is crucial. In Japan, CT is a major cause of STD and it is also known as a co-factor for HIV infection(Umenai et al. 1996).

Our previous paper (Umenai et al. 1996) reported high prevalence of CT infection among pregnant women in Japan and suggested importance of developing reliable measures for studying sexual behavior among general population as well as effective surveillance system of HIV and STDs.

This study was conducted firstly to examine prevalence of CT infection among young generations and pregnant women and secondly to discuss possibility of using CT infection as a reliable methods for studying sexual behavior.

MATERIAL AND METHODS

Of total 7665 sera, 2450 were from those of students less than 20 years of age taken for epidemiological study on virus and bacterial infections with verbal informed consent during 1980 and 1993 and stocked after the test, and 5215 sera were from pregnant women attending obstetric clinics during 1993 and 1997.

The examination of *C. trachomatis* antibody of the serum was conducted under anonymous unlinked test by ELISA method using HITAZYME (Hitachi Chemical Co., Ltd., Tokyo). All data have been analyzed by chi-square test and $p < 0.05$ are considered as statistically significant.

RESULT AND DISCUSSION

CT antibody positive rates were low with students such as less than 5% among both male and female students (Fig. 1). With regard to pregnant women, CT antibody positive rate was 24.5%, which was significantly ($p < 0.001$) higher

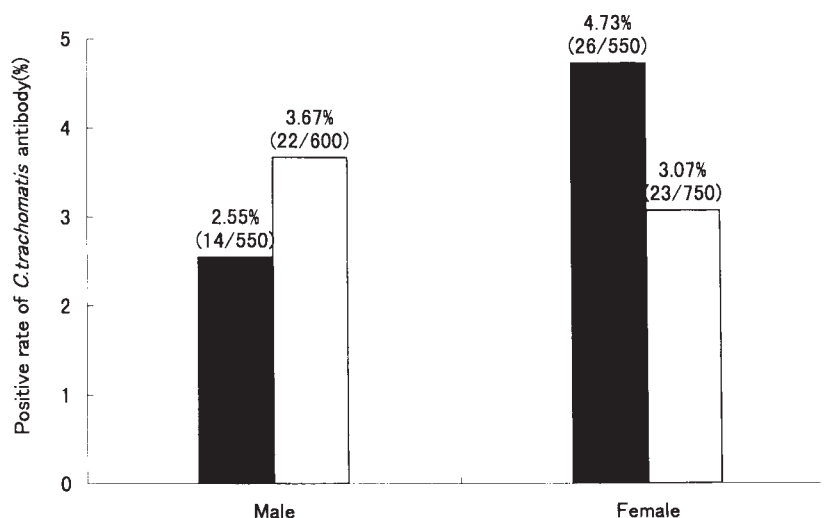


Fig. 1. *Chlamydia trachomatis* antibody examination. Result for students group. Filled column and open column are represented group of age under 15 and age 16-20, respectively.
 ■, age under 15; □, age 16-20.

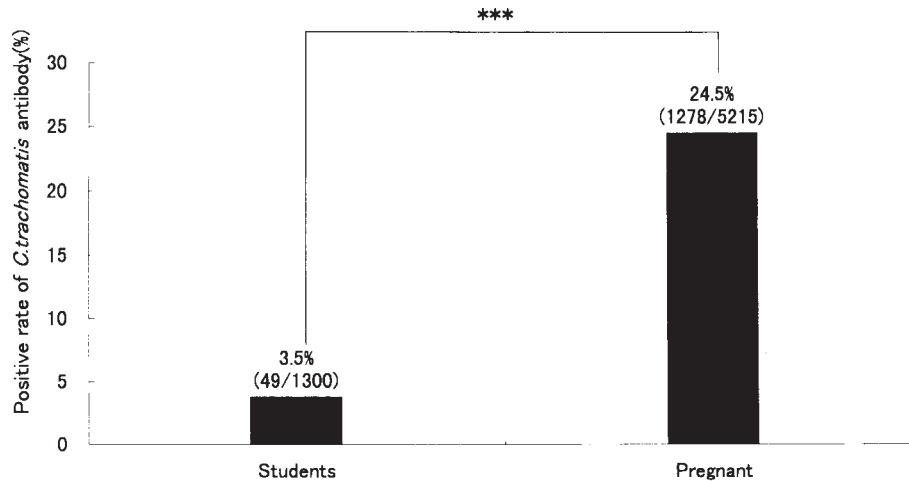


Fig. 2. *Chlamydia trachomatis* antibody examination. Result of students women versus pregnant women. ***Represented for significance of $p < 0.001$.

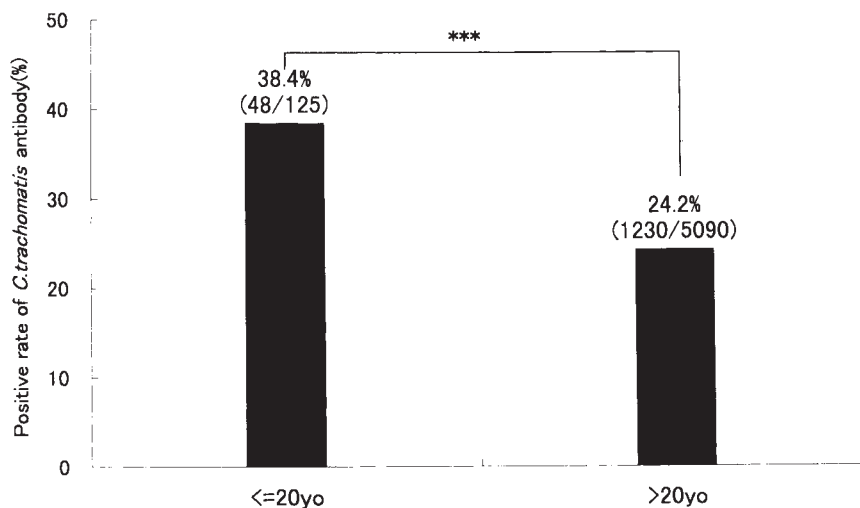


Fig. 3. *Chlamydia trachomatis* antibody examination. Result of pregnant women. ***Represented for significance of $p < 0.001$.

than that of female students of 3.5% (Fig. 2). To avoid age bias, CT antibody positive rates were compared between pregnant women of age under 20 years old and these of over 20 years old. It was found that the former was significantly ($p < 0.001$) higher (38%) than the latter (24%) (Fig. 3) supporting the above finding that CT antibody positive rate of pregnant women were higher than those of female students.

The low prevalence of CT infection among students of this study concurred with the other report (Mizoguchi 1993). The high prevalence of CT infection among pregnant women also concurred with our previous study (Umenai and Kikuchi 1996). These results may indicate that pregnancy is associated with more chance of CT infection, or more susceptible to CT infection. However, the latter may not be the reason, since Kikuchi et al. (1997) reported that CT infection rate was as low as less than 1% among Brazilian-Japanese pregnant women living

in Japan.

Another explanation will be that young generation in Japan have less chance to contract CT infection through sexual contact while pregnant women and elder group have more chance of contacting CT infection. In this case, it may be suggested that the detection of CT infection can be used as an indicator of conducting sexual practice which induces CT infection.

So far, sexual behavior study has been made by analyzing information collected through direct interview, telephone interview or questionnaire. However, these methods have their limitations because of problems of keeping privacy and delicacy of questioning as well as answering sexual behavior. Consequently, if the examination of CT infection is combined with the above methods, this will certainly provide an important base for developing more reliable methods for studying sexual behavior study among general population.

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