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Increase in Primary and Secondary Syphilis Notifications in Men in Tokyo, 2007–2013

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SUMMARY: The number of notified syphilis cases in Tokyo has more than doubled in recent years. The number of reported primary and secondary syphilis cases increased from 108 cases (0.8 per 100,000 population) in 2007 to 245 cases in 2013 (1.9 per 100,000 population). During this period, the majority of cases was male (905/1,024), and the recent increase among primary and secondary syphilis cases was attributed to the increase among males (90/108 [83%] cases in 2007 to 218/245 [89%] cases in 2013); men aged 20–49 years contributed most to the increase, with those aged 30–34 years having the highest notification rate in 2013. Male-to-male transmission was the primary route of infection reported, and men who have sex with men (MSM) accounted for nearly 80% of male cases in 2013. Syphilis appears to be reemerging in Tokyo, and reducing the risk of acquiring syphilis among MSM aged 20–49 years should be a public health priority in Tokyo.

INTRODUCTION

Syphilis is a sexually transmitted infection (STI) caused by the bacterium Treponema pallidum and one of the oldest documented diseases. While some infections are asymptomatic, if untreated, tertiary syphilis lesions such as visceral multiple organ involvement, including serious vascular and neurological damage, may occur after many years from initial infection (1). After the introduction of penicillin, which has been an effective antimicrobial agent for all stages of syphilis including congenital cases, syphilis incidence significantly declined in many developed and developed countries (2–4).

In Japan, syphilis has been a notifiable disease under the Venereal Diseases Prevention Law since 1948 and under the Infectious Diseases Control Law since 1999. Physicians are required to report all laboratory-confirmed syphilis cases (i.e. primary, secondary, late and congenital syphilis, and asymptomatic cases) to the nearest local public health center, who in turn report the surveillance data to the Ministry of Health, Labour and Welfare and the National Institute of Infectious Diseases (5). The surveillance data are managed and reported through the National Epidemiological Surveillance of Infectious Diseases (NESID) system. Based on surveillance data acquired from NESID, the number of reported syphilis cases in Japan declined to 509 in 2003, but started increasing in 2004 (5,6). In recent years, this increase has been observed particularly in Tokyo prefecture, but the details of the affected population have not been well described.

Tokyo prefecture’s population is approximately 13 million, accounting for about 10% of the total national population. There are 31 public health centers (23 in the Tokyo metropolitan area, 7 in the Tama area and 1 in the Island area) and approximately 13,000 medical facilities in the prefecture. Given the recent rise in reported syphilis cases in Japan, with the majority arising from Tokyo, we describe the epidemiology of syphilis in Tokyo, with a particular focus on identifying high-risk groups, based on reported surveillance data.

MATERIALS AND METHODS

Surveillance data of syphilis cases reported between January 2007 and December 2013 in Tokyo were extracted from NESID on March 3, 2014. Demographic information including gender and age at diagnosis, clinical features of cases such as stage, and suspected route of transmission were included. The reportable case definition of syphilis under the Infectious Disease Control Law is a positive result by both specific treponemal test (e.g. T. pallidum hemagglutination assay, T. pallidum latex agglutination) and non-specific treponemal test (e.g. rapid plasma reagin, latex agglutination), or laboratory identification of T. pallidum (5).

Notification rates for syphilis were calculated using the 2007–2013 census estimates for Tokyo prefecture. While identifiable information were not included in the extracted data, since this study was based on legally reportable surveillance data, ethical approval and informed consent were not required.
RESULTS

A total of 1,698 syphilis cases ($n = 270$ primary, $n = 754$ secondary, $n = 65$ late, $n = 6$ congenital, and $n = 603$ latent) were reported from January 2007 to December 2013 from medical facilities in Tokyo prefecture. The number of cases increased from 164 in 2007 to 417 in 2013. Primary and secondary syphilis, which reflect recent incident infection, increased from 108 cases in 2007 (0.8 per 100,000 population) to 245 cases in 2013 (1.9 per 100,000 population) (Fig. 1). The majority of primary and secondary cases (230/245 [94%] cases) were reported from the 23 public health centers located in the metropolitan area; a single public health center accounted for more than half of the cases (135/245 [55%]).

During the study period, the majority of primary and secondary cases were male (905/1,024 [88%]), who contributed most to the recent increase (90/108 [83%] cases in 2007 to 218/245 [89%] cases in 2013); the notification rate of male primary and secondary cases increased from 1.4 per 100,000 population in 2007 to 3.3 per 100,000 population in 2013. Among males, the largest increase was observed among those aged 20–49 years, with the highest absolute number and notification rate among those in their 30’s (7.5 per 100,000 population) (Fig. 2). Among male primary and secondary cases in 2013, male-to-male transmission accounted for 156 of the 194 cases which reported route of infection (80%).

DISCUSSION

The reported number of syphilis cases has been increasing continuously since 2007 in Tokyo. Notably, the increase has been in male primary and secondary syphilis cases, with much of the recent cases reported as male-to-male transmission. Similar to Tokyo, notification rates of primary and secondary syphilis cases have been recently increasing among men who have sex with men (MSM) in several developed countries (3,4). Possible reasons for such rise in syphilis notifications among MSM have been reported as human immunodeficiency virus (HIV) prevention fatigue, antiretroviral treatment optimism, an increase in recreational drug use, sero-sorting or decreasing acquired immunodeficiency syndrome mortality (7). In Japan, however, the reported number of newly diagnosed HIV cases has been stable in recent years (8). One possible reason for the discordant trend observed between HIV and syphilis notifications is that there may be a core group that is sero-sorting based on HIV status but repeatedly acquiring and transmitting syphilis in Japan. Unfortunately, based on the current NESID system, we could not address such questions and the degree of HIV and syphilis coinfections is unknown. Assessing the magnitude and patterns of syphilis reinfection among MSM HIV patients may provide some insight regarding the recent increase.

One unique finding from this study was the affected age group. In addition to young MSM in their 20’s, older MSM in their 30’s and 40’s contributed considerably to the recent increase in primary and secondary syphilis in Tokyo. In the United States, males in their 20’s have been the demographic with the highest notification rate, showing also the greatest increase in recent years (3). In several European countries, males aged 25–34 years have been reported as having the highest notification rate, but those aged 35–44 years showed the greatest increase in notification rate recently (4). The reason(s) why older MSM have a higher notification rate in Japan and European countries is uncertain. Investigation into the possible reasons behind the increase in this particular age group or cohort will be important to efficiently
and effectively control syphilis in Tokyo.

Importantly, one of the public health centers in the Tokyo metropolitan area accounted for more than half of the primary and secondary syphilis cases reported from Tokyo prefecture. This jurisdiction is known to have popular meeting venues for MSM and many medical facilities are also present where MSM with STIs can access treatment. Thus, gay cruising spots and treatment facilities in this area are ideal places to provide information on STI testing, prevention, and education. However, the use of the Internet has been increasing as a tool to find sex partners, and has been reported as one possible cause of increasing syphilis (7,9). Therefore, a better understanding of how MSM are seeking and communicating to their sexual partners in Tokyo is imperative to find potential entry points for effective control measures, such as partner notification.

The results of our study need to be interpreted under several limitations. The number of serological tests conducted for syphilis was uncertain in the current surveillance system, and we could not evaluate testing data over time; such evaluations can help distinguish between a true rise in incidence from an increase in notifications due to increased testing (10). Similarly, increase in physicians’ awareness about syphilis and the need for reporting may have resulted in an increase in notification rate. Lastly, male-to-male transmission may be underreported due to social stigma in Japan; however, the recent rise has been primarily through this route and such misclassification is likely decreasing in Japan and the already high proportion of MSM among syphilis cases indicate that MSM should be an important target population for intervention.

In conclusion, the reported number of primary and secondary syphilis cases increased considerably among men in their 20’s–40’s in Tokyo during 2007–2013, with MSM accounting for the majority of cases. Understanding how and why this demographic is acquiring syphilis and implementing integrated control measures is a public health priority for Metropolitan Tokyo.

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Conflict of interest None to declare.

REFERENCES
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