Evaluation of a new accelerated commercial micro-method for the presumptive diagnosis of Mycoplasma genitalium infections

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Background: Mycoplasma genitalium is a urogenital pathogen responsible for sexually transmitted infections in men and women. The growth of this bacterium is very slow and high-quality mycoplasma culture media or Vero cell co-culture is necessary for the isolation. Laboratory diagnosis of M. genitalium infections is based in molecular tests, principally in qPCR. In 2014, the MYCOWELL-D-ONE (CPM Scientifica, Italy) culture-based kit was introduced and validated in Cuba for the diagnosis of urogenital mycoplasma such Mycoplasma hominis and Ureaplasma spp., but no data were available on the utility of this kit for the identification of M. genitalium. The aim of this study was to evaluate the MYCOWELL-D-ONE for the identification of M. genitalium in clinical specimens compared with M. genitalium qPCR.

Results: M. genitalium was detected in 29 samples by qPCR and 10 of these were positive for Mycoplasma spp. (glycolytic group) suggestive of M. genitalium by MYCOWELL-D-ONE. The MYCOWELL-D-ONE kit showed a specificity of 100% (95% CI: 96.41 to 100.0%) and a sensitivity of 34.48% (17.94 to 54.33) for detection of M. genitalium in clinical specimens.

Conclusion: In conclusion, PCR continue to be the best alternative for M. genitalium diagnosis, but the surprisingly high culture positive rate in the MYCOWELL-D-ONE kit merits further investigation as cultured strains are strongly needed to increase our knowledge about this difficult, emerging pathogen.

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Time series transition of basic reproduction number of Syphilis in Japan

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Background: Syphilis remains a global challenge, despite the existence of effective preventive measures and treatment options. Recently, reported number of Syphilis case has been increasing in Japan. The total number of reported syphils case amounted to 4,559 in 2016, which is over 7 times larger than that in 2010. However, we have not identified any specific cause of this increase so far. Furthermore, it is often difficult for us to comprehend actual epidemiology of Syphilis due to uncertainty in reporting system and its clinical characteristics. On the other hand, basic reproduction number (R0) has been regarded as a key indicator of infectious diseases to understand how they transmit from human to human. In this study, we investigated time series transition of effective reproduction number (Rt) for better understanding of the current Syphilis outbreak in Japan.

Methods & Materials: To estimate Rt, we employ the renewal equation. Let \( i_w \) be the number of new cases on epidemiological week \( w \), we have \( i_w = R_t \sum_{i=1}^{w} g_i \).

Where \( g_i \) represents probability distribution function of generation time. Assuming that the observed incidence followed a Poisson distribution, we estimated \( R_t \) by fitting the equation to observed data. Observed data were separated into male-primary, male-secondary, female-primary and female-secondary Syphilis. Parameters for each compartment were calculated by maximum likelihood estimation.

Results: The basic reproduction number (R0) of Syphilis in Japan has increased from 1.32 to 1.50 during 2006–2015. Considering each component of \( R_t \), fraction of female to male transmission increased during the decade of the research interest.

Conclusion: \( R_t \) of Syphilis in Japan has gradually increased from 2006 to 2015. The incremented fraction of female-to-male transmission component suggests that the main route of Syphilis transmission also changed. Epidemiological prediction and constructing more detailed model would be future challenges.

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