

SHORT COMMUNICATION

Understanding Utilization and Seroprevalence of Syphilis Tests in Local Clinics and Hospitals in Korea

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SUMMARY

Background: Diagnosis of syphilis, a sexually transmitted infection, can be based on clinical information and various combinations of results of both non-treponemal and treponemal assays. Because understanding a patient population is helpful for test utilization in the clinical laboratory, we aimed to investigate the results of syphilis serology tests requested from local clinics in Korea.

Methods: We retrospectively evaluated the syphilis serology test results of serum Rapid Plasma Reagin (RPR), *Treponema pallidum* latex agglutination (TPLA), RPR titer, and fluorescent treponemal antibody absorption (FTA-ABS) IgG, and IgM tests performed in Korean adults in the laboratory information system of Green Cross Laboratories. We investigated the patterns of syphilis serology test results and possible interpretation according to combinations of syphilis serology based on a traditional testing algorithm.

Results: During the one-year study period, 33,746 RPR tests were performed in Korean adults (7,622 men and 26,124 women) with a median age of 35.1 years (interquartile range 30.8 - 43.4 years). Among these RPR tests, 317 (0.9%) showed RPR+ results and were performed simultaneous with TPLA tests. Among these 317 patients, 187 (59.0%) had RPR+/TPLA+ results. Among 130 patients with RPR+/TPLA- results, FTA-ABS IgG and IgM were only tested in 15 (11.5%): 14 were IgG-/IgM-, and one who underwent only the IgM test showed a negative result (probably a biological false positive of RPR). Among 187 RPR+/TPLA+ patients, 60 (2.1%) had RPR titer \geq 1:8, and 10 were FTA-ABS IgM+ (including weak reactive results probably due to current infection or rare biological false-positive). Among 121 patients with RPR+/TPLA+/RPR titer \leq 1:4, 30 were tested for FTA-ABS IgG and/or IgM: the two FTA-ABS IgM+ (including weak reactive) patients had an RPR titer of 1:4.

Conclusions: This study will help to understand patient populations and test utilization for syphilis serology test interpretation in clinical laboratories in Korea. Further studies are needed to investigate the clinical impact of test utilization of syphilis serology in Korea.

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Supplementary Data

Supplemental Table S1. Incidence of syphilis in Korea, 2001 - 2020.

Year	Infectious disease notifications by sentinel surveillance ^a	Primary syphilis ^b	Secondary syphilis ^b	Congenital syphilis ^b
2001	252	-	-	-
2002	134	-	-	-
2003	582	-	-	-
2004	807	-	-	-
2005	674	-	-	-
2006	1,179	-	-	-
2007	1,415	-	-	-
2008	1,548	-	-	-
2009	1,442	-	-	-
2010	1,144	-	-	-
2011	Infectious disease notifications by sentinel surveillance before law revision (2010.12.30)	690	235	40
2012		562	199	26
2013		566	210	22
2014		726	258	31
2015		720	253	33
2016		1,067	481	21
2017		1,454	684	10
2018		1,571	680	29
2019		1,176	554	23
2020		330	-	-

Data from the Infectious Diseases Surveillance Yearbook, 2020 by Korea Disease Control and Prevention Agency. Available at: <https://www.kdca.go.kr/npt/biz/npp/portal/nppPblctDtaView.do?pbldtDtaSeAt=1&pbldtDtaSn=2452>.

^a Number of notifications per sentinel.

^b Number of notifications, Incidence rate per 100,000 population.