

## **Seronegative primary syphilis: associated clinical and laboratory factors. A cross-sectional clinic-based study.**

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### **Background**

Serology is negative in a proportion of primary syphilis cases where *Treponema pallidum* polymerase chain reaction (PCR) testing is positive. We aimed to identify clinical or laboratory factors associated with discordant, *T. pallidum* PCR-positive, serology negative primary syphilis cases.

### **Methods**

Serodiscordant primary syphilis cases that were *T. pallidum* PCR positive and serology negative (including rapid plasma reagin, *T. pallidum* particle agglutination, *T. pallidum* enzyme immunoassay or *T. pallidum* chemiluminescence assay) were identified from the Melbourne Sexual Health Centre electronic records between April 2011 and December 2019. Clinical and laboratory associations were examined.

### **Results**

There were 814 primary syphilis cases in the study period and 38 (4.7%) were serodiscordant, 35 in men who have sex with men. Thirty-two had follow-up serology performed a median of 24 days later, of which 16 (50%) seroconverted, mostly

(81%) within six weeks. Seroconversion was significantly associated with delayed treatment. If treated on day 1: 2 of 16 (12.5%) seroconverted compared with 14 of 16 (87.5%), ( $p = 0.009$ ) if treated after day 1.

## **Discussion**

Earlier treatment of primary syphilis can prevent the development of serological markers. *T. pallidum* PCR can identify primary syphilis lesions before the development of serological markers and improve diagnosis of early primary syphilis lesions. Serology alone will miss a proportion of primary syphilis infections and should be repeated if a diagnosis of syphilis is being considered.

## **Disclosure of Interest Statement**

MYC has received donated materials from SpeedX. All other authors declare no competing interests.