Title : Risk Factors Influencing Congenital Syphilis Under the Surveillance System in the Upper Northern Region of Thailand

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ABSTRACT

This study aimed to investigate the epidemiological characteristics of pregnant women infected with syphilis and their infants; to compare the differences between congenital syphilis diagnostic criteria under the surveillance system and clinical diagnosis; to examine the relationship between maternal treatment standards and False negatives of diagnosis according to the surveillance criteria ; and to analyze the factors associated with congenital syphilis in the upper northern region of Thailand.Secondary data obtained from the Digital Disease Surveillance (DDS) and the Congenital Syphilis Response System (CSRS) between 2022 and 2024, consisting 105 infants from mothers with syphilis, were used in our study. Data were analyzed using descriptive statistics, the McNemar test, the Chi-square test, and binary logistic regression. The results showed that 14.29% of infants were born preterm, 23.81% had low birth weight, 10.45% presented with abnormal symptoms, and 20.95% were asymptomatic but infected. According to the surveillance criteria, 31.43% of infants were diagnosed with congenital syphilis, while 48.57% were diagnosed according to clinical criteria, with a statistically significant difference between the two diagnostic methods. The surveillance-based diagnosis yielded a false-negative rate of 35.29%. The factor most strongly associated with false-negative diagnoses under the surveillance criteria was maternal reinfection

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after treatment, which increased the risk of a false-negative result by 26 times compared to mothers without reinfection. Factors associated with the occurrence of congenital syphilis included the type of antenatal care (ANC) service facility (pregnancy registration at clinics or other health facilities: AOR = 2.41, 95% CI: 1.01–5.73), gestational age at the first ANC visit of 32 weeks or more (AOR = 7.24, 95% CI: 13.0–40.29), and receiving treatment more than seven days after diagnosis (AOR = 2.45, 95% CI: 1.01–5.92), after controlling for other variables. These findings highlight approaches to improve the accuracy of surveillance-based diagnosis and strategies to reduce the risk of congenital syphilis through timely ANC attendance and adherence to standardized maternal treatment protocols.

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