Thesis Title PREVALENCE OF ASYMPTOMATIC GENITAL HERPES IN NEAR-TERM PREGNANT WOMEN AND ANTI-HSV-2 IgM RESPONSE FOLLOWING FIRST EPISODE AND RECURRENT DISEASES

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ABSTRACT

Herpes simplex viruses types 1 and 2 (HSV-1 and HSV-2), similar to other members of viruses in the family Herpetoviridae, can cause latent infection in their natural hosts. This infection can be reactivated and manifested with or without signs and symptoms, referred to as symptomatic or asymptomatic infections, respectively. Genital herpes in pregnant women has been shown to affect fetuses and newborns and cause significant morbidity and mortality. Thus, cervico-vaginal swabs for detection of HSV shedding should be done during the last month of gestation in women with a history of genital herpes.

In the present study, the prevalence of asymptomatic genital herpes in near-term pregnant women (at least 30 weeks of gestation) who attended the antenatal clinic at Ramathibodi Hospital was

investigated by using *in vitro* cultivation procedure. Various other methods for detection of HSV antigens were also compared to this standard cell culture assay. These included biotin-streptavidin enzyme-linked immunosorbent assay (B-SA ELISA), immuno-peroxidase staining of tissue smears and the staphylococcal co-agglutination test. An attempt to detect anti-HSV-2 IgM was also carried out in cord blood samples obtained from the infants born to some of these mothers. Anti-HSV-2 IgM response was also determined in adults with genital herpetic lesions.

The results indicated that the prevalence of asymptomatic genital herpes infection in these pregnant women was very low, i.e., 1 of 808 (0.12%) was positive by viral isolation and B-SA ELISA while samples obtained from 2 pregnant women with herpetic lesions were positive by both tests.

The protocol of B-SA ELISA used in the present study can detect both HSV-1 and HSV-2 but not varicella-zoster and cytomegalo-virus. The value of immunoperoxidase staining of tissue smears can not be evaluated since specimens from pregnant women who excreted the virus are unavailable. Staphylococcal co-agglutination test could not detect HSV antigens in all 3 HSV-isolation and B-SA ELISA positive samples. When the sensitivity of this assay technique for detection of HSV was determined, it was found to be about 800-fold less sensitive than the B-SA ELISA. It could detect only 6 of 125 (4.8%) whereas 87 of 125 (69.6%) and 84 of 125 (67.2%) was positive by HSV isolation and by B-SA ELISA, respectively. Thus, B-SA ELISA seems to be the most sensitive immunological assay for HSV detection. The assay can be more rapid if either a suitable amount of PEG is included in the detecting antibodies and streptavidin peroxidase or high concentrations of both reagents were used.

For detection of anti-HSV-2 IgM, the diluent should contain high salt concentration (i.e., 0.5 M NaCl) to reduce non-specific binding to the solid phase. The results indicated that anti-HSV-2 IgM was not detectable in all cord sera including from all infants born to 3 mothers who shed HSV during gestation. However, this assay protocol can detect anti-HSV-2 IgM in 11 of 122 (9.0%) and 23 of 141 (16.3%) sera from the patients with 1st episode (geometric mean titer of 1:5,558) and recurrent genital herpes (geometric mean titer of 1:680), respectively. It can be then concluded that anti-HSV-2 IgM should not be used to differentiate between 1st episode and recurrent genital herpes infection in adults, although it can be used to notify HSV infection in newborn infants. In addition, infants may acquired infection intrapartum or postnatally, thus serum samples for anti-HSV IgM detection should be obtained during 1-month period after birth.