

Sexually Transmitted Infections

Serological, microbiological and microscopical aspects

Matilda Berntsson

Department of Dermatology and Venereology, Sahlgrenska University Hospital,
Institute of Clinical Sciences at the Sahlgrenska Academy,
University of Gothenburg, Gothenburg, Sweden

ABSTRACT

The prevalence of sexually transmitted infections (STI) is high in the adult populations worldwide but varies between populations and time periods. Since a high proportion of infected individuals are asymptomatic, diagnostic approaches to reduce further transmission and complications are essential.

The three main topics of this thesis are (1) the prevalence of the herpes viruses: herpes simplex type 1 (HSV-1) and type 2 (HSV-2), Epstein-Barr virus (EBV) and cytomegalovirus (CMV) in different populations; (2) the clinical spectrum of genital infection with HSV-2; and (3) the connection between different criteria of cervicitis and female urethritis and a positive test for *Chlamydia trachomatis*.

Herpes simplex virus type 2 infections, diagnosed by type-specific serology, were common in both STI patients and pregnant women. Of the pregnant women 10% were seropositive for HSV-2, and of female and male STI patients 23% and 12% had HSV-2 antibodies, respectively. Infection with HSV-2 was often asymptomatic and only 41% of seropositive patients had a history of genital herpes. Atypical manifestations, so-called unrecognised infections, were common and are of clinical importance.

Among 112 male patients with urethritis no cases of herpes simplex virus were found. Instead, Epstein-Barr virus was detected by PCR in urethral samples in a significantly higher proportion of the subjects than in the controls (21% vs. 6%). EBV was also detected in 10.5% of cervical samples from young women attending for Cervical Cancer Screening. In a similar proportion of these women, 11.5%, cytomegalovirus was found in the cervical specimens.

In female STI patients a significant correlation with a positive *C. trachomatis* test was shown for mucopurulent discharge in the cervical portio, for easily induced bleeding from the same locus, and for more polymorph nuclear leucocytes (PMNL) than epithelial cells in the vaginal wet smear. However, no correlation was demonstrated between microscopical cervicitis or urethritis and *C. trachomatis*.

In conclusion, diagnostic tests for HSV-2 should be performed generously in patients with recurring genital symptoms of unknown cause. The detection of EBV in urethral samples from men with urethritis and the demonstration of EBV and CMV in the cervix of young women support genital transmission of these viruses. Epstein-Barr virus was significantly correlated to male urethritis, which has not been demonstrated previously. However, further studies are needed to elucidate a possible causality between EBV and urethritis. Since an elevated number of PMNL in stained smears from the cervix or the urethra was not correlated with a positive test for *C. trachomatis*, routine sampling for microscopy from these loci in unselected female STI patients is questionable.

Key words: Herpes simplex virus, seroprevalence, Epstein-Barr virus, cytomegalovirus, urethritis, cervicitis, *Chlamydia trachomatis*, STI

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Matilda Berntsson
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Fakultetsopponent: Peter Lidbrink, docent, överläkare
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The thesis is based on the following papers:

I. Gun-Britt Löwhagen, Matilda Berntsson, Ellen Bonde, Petra Tunbäck, Ingela Krantz
Acceptance and Outcome of Herpes Simplex Virus Type 2 Antibodies Testing in Patients
Attending an STD Clinic – Recognized and Unrecognized Infections.
Acta Derm Venereol 2005; 85: 248–252

II. Matilda Berntsson, Petra Tunbäck, Agneta Ellström, Ingela Krantz and Gun-Britt
Löwhagen
Decreasing Prevalence of Herpes Simplex Virus-2 Antibodies in Selected Groups of Women
in Sweden
Acta Derm Venereol 2009; 89: 623–626

III. Matilda Berntsson, Gun-Britt Löwhagen, Tomas Bergström, Lejla Dubicanac, C
Welinder-Olsson, G Alvengren, Petra Tunbäck
Viral and bacterial aetiologies of male urethritis: findings of a high prevalence of Epstein-Barr
virus
Int J STD AIDS. 2010 Mar; 21(3):191-4

IV. Matilda Berntsson, Lejla Dubicanac, Petra Tunbäck, Agneta Ellström, Gun-Britt
Löwhagen, Tomas Bergström
Frequent detection of CMV and EBV in cervical secretions in healthy young women
(In manuscript)

V. Matilda Berntsson, Petra Tunbäck
Clinical and microscopical signs of cervicitis and urethritis and the correlation with
Chlamydia trachomatis infection in female STI patients
(In manuscript)



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