LAB NEWS

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Clinical Virology Laboratory Newsletter

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HSV TYPE-SPECIFIC ANTIBODY, IgG

Genital herpes is one of three most prevalent sexually transmitted diseases (STDs) in the U.S., along with chlamydia and human papillomavirus (HPV)[1]. Most genital infections are caused by herpes simplex virus (HSV) type 2. Infection is lifelong and reactivation occurs often without symptoms. In 1991, HSV-2 seroprevalence was 22% in the general U.S population and 30-70% in STD clinics. Today, seroprevalence is undoubtedly higher. Transmission is primarily by infected persons with mild or absent clinical manifestations, and can occur in long-standing monogamous relationships. At least 75% of persons with genital herpes do not know they are infected. The most serious direct consequence of genital HSV infection is perinatal transmission from mother to infant.[2] While most HSV infections in the normal host are mild or subclinical, genital HSV may be a potent facilitator of HIV transmission. Many HIV patients are co-infected with HSV-2. Treatment of HSV reduces HIV-1 RNA as well as HSV-2 shedding, and thus can reduce spread of both.[3]

Laboratory testing for latent HSV infection (antibody assays):

The Clinical Virology Laboratory has offered a type-common HSV IgG test for many years, intended to screen patients prior to transplantation to identify latent HSV infection. Recently, type-specific HSV antibody assays based on glycoprotein G (gG) have become available.[4] These assays can be used to confirm a diagnosis of genital herpes, establish the diagnosis in "atypical" cases, identify asymptomatic carriers, and identify persons at risk for acquiring HSV. The Virology Laboratory uses Focus HerpeSelect Immunoblot IgG which has a reported sensitivity and specificity of 97-99% and 93-98% respectively, depending on HSV type.[4] These assays should be used with caution in low risk patients.

Indications for HSV type-specific antibody testing include:

1. Screening pregnant women and their partners (*the cost effectiveness is controversial*)[2,5,6]
2. Identifying discordant couples and counseling them about the risk.
3. Screening selected populations at risk for STD, especially those with a history of genital ulcers, and counseling them to avoid transmission.
4. Identifying HSV-2 co-infections in persons with HIV infection and giving suppressive therapy[3]

Submit: 3 mL blood (red top tube) and order HSV type-specific antibody, IgG.

***Note**: IgG antibody may be negative early after a new infection. Repeat testing in 2-3 months is recommended. For active disease, swabbing of lesions for HSV DFA, culture or PCR is recommended.*

References:

1. Corey L and Handsfield HH. Genital herpes and public health. JAMA 283:791-794, 2000.
2. Brown ZA. HSV-2 specific serology should be offered routinely to antenatal patients. Rev Med Virol 10:141-144, 2000.
3. Nagot N et al. Reduction of HIV-1 RNA levels with therapy to suppress herpes simplex virus. N Engl J Med 356:790-9, 2007.
4. Wald A and Ashley-Morrow R. Serological testing for herpes simplex virus (HSV)-1 and HSV-2 infection. Clin Infect Dis 35 (Suppl 2): S173-82, 2002.
5. Cleary KL et al. Type-specific screening for asymptomatic herpes infection in pregnancy: a decision analysis. BJOG 112:731-6, 2005.
6. Baker D et al. Cost-effectiveness of herpes simplex virus type 2 serologic testing and antiviral therapy in pregnancy. Am J Obstet Gynecol 191:2074-84, 2004.

CLINICAL VIROLOGY LABORATORY, YALE NEW HAVEN HOSPITAL
TESTS PERFORMED: September 2007

Category	Test	Detects	Results
Virus Isolation	Conventional cell culture in roller tubes	Cytopathic effects (i.e. cell pathology & death), confirmation by IF staining	1-21 days
	Shell vial centrifugation culture	Viral proteins in infected cells by IF staining	1-4 days
Antiviral susceptibility	Viral-induced plaque reduction	HSV susceptibility to acyclovir	1 week
Viral antigen	CMV pp65 antigenemia (DFA)	CMV pp65 protein in peripheral blood neutrophils	5-48 hrs
	HSV/VZV skin DFA	Viral proteins in infected squamous epithelial cells	2-18 hrs
	Resp. virus DFA: 1) RSV, influenza A, B, parainfluenza 1-3, adenovirus; 2) HMPV	Viral proteins in infected ciliated epithelial cells	2-18 hrs.
	Rotavirus EIA	Viral proteins in stool	4 hrs-3 days
Molecular tests	HIV-1 RT-PCR (Roche Cobas) - standard assay for >400 copies/mL - ultrasensitive assay for <400 copies/mL	Quantitates HIV-1 RNA in plasma	8 hrs-4 days
	HIV DNA PCR (Roche)	Detects HIV provirus in PBMC	1-4 days
	HIV-1 resistance genotyping	TruGene sequencing	1-2 weeks
	HCV TaqMan RT-PCR, Quant (Roche)	Detects and quantitates HCV RNA in serum	8 hrs-4 days
	HCV genotyping by Invader Assay	Determines genotype	1-7 days
	HBV TaqMan DNA PCR, Quant (Roche)	Detects and quantitates HBV DNA in serum	8 hrs-8 days
	HSV type common TaqMan PCR* HSV 1, 2 typing TaqMan PCR*	Detects HSV DNA in CSF, ocular fluid Separate multiplex PCR performed for typing	8 hrs-3 days
	VZV TaqMan PCR*	Detects VZV DNA in CSF, ocular fluid, & other	8 hrs-3 days
	CMV TaqMan PCR, Qual and Quant*	Detects CMV DNA in CSF, ocular fluid, plasma, amniotic fluid	8 hrs-3 days
	EBV TaqMan PCR *	Detects CMV DNA in CSF, ocular fluid, plasma	8 hrs-3 days
	HHV-6 type common TaqMan PCR*	Detects HHV-6 DNA is CSF, plasma, tissue	8 hrs-3 days
	Parvovirus B19 TaqMan PCR*	Detects B19 DNA in serum, bone marrow, amniotic fluid, CSF	5 hrs-3 days
	Adenovirus TaqMan PCR, Qual and Quant*	Detects and quantitates adenovirus in plasma, stool	8 hrs-3 days
	JC virus TaqMan PCR*	Detects JCV DNA in CSF, urine, plasma	8 hrs-3 days
	BK virus TaqMan PCR, Qual and Quant*	Detects and quantitates BKV in plasma, urine	8 hrs-3 days
	Human metapneumovirus TaqMan one-step RT-PCR*	Detects HMPV RNA in respiratory samples	8 hrs-3 days
	Influenza A and B multiplex TaqMan one-step RT-PCR*	Detects influenza A and B in respiratory samples (in season)	8 hrs-3 days
	RSV multiplex TaqMan one-step RT-PCR*	Detects RSV in respiratory samples (in season)	8 hrs-3 days
	Enterovirus TaqMan 2-step RT-PCR*	Detects enterovirus RNA in CSF & other samples	8 hrs-3 days
	Norovirus genogroups I and II multiplex TaqMan 2-step RT-PCR*	Detects norovirus genogroups I and II in stool	8 hrs-3 days
Viral antibody tests	ELISA IgG (ELISA IgM for HAV, HBV,CMV, WNV only)	HSV, VZV, measles, rubella, CMV, HIV 1 & 2, HTLV I/II, hepatitis A, B, C. parvovirus B19, WNV	8 hrs-8 days
	IF	EBV VCA IgG & IgM, EBNA	8 hrs-3 days
	Western blot	HIV-1	1-8 days
	RIBA	HCV	1-8 days
	Immunoblot	HSV-1 and HSV-2 type specific IgG antibodies	1-8 days
	Monospot (latex agglutination)	Heterophile antibodies	2-18 hrs
	Latex agglutination	VZV antibodies (first tested by EIA)	1-3 days
C. difficile toxin	Cytotoxicity in cell culture with neutralization by antitoxin	Toxin B	4-48 hrs

*"Home-brew" methods. Most molecular and serology tests are done Mon-Fri. Exceptions: HSV & enterovirus PCR on CSF is done Mon-Sat, and rapid HIV antibody is available 24/7 for labor & delivery, transplant, and needlesticks if needed.

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