

Herpes Simplex Virus and pregnant women

Infecția cu Virusul Herpes Simplex în sarcină

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There is no conflict of interest for the authors.

Abstract

Herpes simplex viruses (HSVs) are important viral infections which may cause different infections in human hosts. There are two types of HSVs including HSV-1 and HSV-2. In most cases HSV infections are asymptomatic, which is life threatening for pregnant women and their newborns. For this reason we have an eye on HSV, epidemiology, diagnosis and treatment of HSV infections in pregnant women. This review has been made by searching several reviews and original articles in different search engines and databases within Internet. The results show that HSV infections are one of the most encountered sexual transmitted diseases. The rate of prevalence and incidence of HSV infections is high in developing countries. Multisexual partnership and unsecured sexual intercourse increase the risk of infections. In conclusion, healthy sexual relationship reduces the possibility of the HSV infections among pregnant women.

Keywords: HSV-1, HSV-2, pregnancy

Rezumat

Infecția cu virusurile Herpes Simplex (VHS) reprezintă un grup complex de infecții, care pot avea drept gazdă organismul uman. Există două tipuri de VHS: VHS-1 și VHS-2. În cea mai mare parte din cazuri, infecțiile cu VHS sunt asimptomatice, ceea ce reprezintă un veritabil pericol pentru femeile gravide și nou-născuți. Din acest motiv, vom trece în revistă cele mai importante aspecte referitoare la epidemiologia, diagnosticul și tratamentul infecțiilor cu VHS la femeile însărcinate. Acest review a fost alcătuit pe baza articolelor de specialitate publicate în mediul online. Rezultatele căutării au arătat că infecțiile cu HSV sunt cele mai cunoscute infecții cu transmitere sexuală; partenerii sexuali multipli și contactul sexual neprotejat reprezintă factori de risc ai transmiterii. Ratele de prevalență și incidență ale infecțiilor cu HSV sunt ridicate în țările în curs de dezvoltare. În concluzie, reducerea comportamentului sexual la risc conduce la scăderea posibilității de transmitere a infecției cu VHS la femeile însărcinate.

Cuvinte-cheie: VHS-1, VHS-2, sarcină

Introduction

Pregnancy is a special period of life that most women experience. One of the most typical characterizations of pregnant women is deficiency in their immune system. Thus, pathogenic microorganisms like viruses are able to dominate the host's defense system. Herpes simplex virus (HSV) is a well known microbial agent that causes different infections in humans⁽¹⁾.

In accordance with several recorded studies, HSV is generally transmitted via sexual intercourse. So, infections caused by HSV are recognized as sexually transmitted diseases (STDs). HSV-1 is normally responsible for oro-facial infections such as pharyngitis, keratoconjunctivitis and gingivostomatitis, while HSV-2 causes genital diseases. However, both types of HSV, either HSV-1, or HSV-2, are able to cause genitourinary tract infections genitourinary tract in their human hosts⁽²⁻⁵⁾.

The National Health and Nutrition Examination Survey (NHANES) center represents data relating to HSV infections in different years. The data show the increase of genital infections causing by HSV-1 among female populations⁽⁶⁾.

There are three groups of patients with HSV infections including first-time HSV infection, infection with another HSV type, and recurrent infections. All the three types of HSV infections are seen in pregnant women, which may lead to infection occurrence in fetuses and newborns with different morbidities and even mortality^(4,6).

In this review we have an eye on HSV, epidemiology, diagnosis and treatment of HSV infections in pregnant women.

HSV

The large, double stranded, and enveloped HSVs are members of the *Herpesviridae* family. There are two types of HSVs comprising HSV-1 and HSV-2. These viruses are isolated from everywhere and recognized as ubiquitous human pathogenic viruses. They have chosen human beings as their single natural reservoir. HSVs infections vary from asymptomatic to deathful diseases^(7, 8).

HSVs are transmitted throughout direct contacts between mucosa and epithelial tissues. As HSVs are known neurotropism viruses, they migrate to nervous

tissues after transmission. On the other hand, the viruses are able to encode enzymes contributing in their own replication processes. This mechanism helps HSVs to be replicated in different types of cells. The latency and life longevity of HSVs in their host cells is directly dependent on the viral enzyme machinery system characterizations^(1,4-7).

There are separated ways for HSVs dissemination among people. HSV-1 spreads person-to-person by respiration and/or saliva contacts while HSV-2 is transmitted via sexual contacts⁽⁵⁾.

Epidemiology

HSVs rank in the range of one of the most concerned STDs agents around the globe.

According to some results from previous investigations, the incidence of HSVs infections among pregnant women populations is estimated around 2%. In the most cases, the HSVs infectious diseases are asymptomatic^(5,9).

In recent decade, the HSVs genital infectious diseases transmitted via sexual intercourse have been significantly increased⁽¹⁾.

The social behavior determines the prevalence of HSVs infections among people. In developing countries, HSV-2 infections involve up to 80% of female (and more than 80% of women belonging to sexual slavery) and up to 50% of male populations.

The most infected women are in the age range of teens to 50 years old. A huge number of HSV infections have no or mild demonstrations with no recognition; therefore, most vulnerable patients to HSVs infections are pregnant women. There is a minor group of people having clinical manifestations such as genital lesions and herpetic ulcers^(1,2,10).

The age is a risk factor for non-sexual HSV-1 infections; the HSV-1 infections are transmitted via saliva among young children. Sexual abused children or sexual active women may be infected by HSV-1, too. But, age and sexual behavior are important predisposing factors in the case of HSV-2 transmissions^(1,4,8,10).

Race, low social economy, vaginosis caused by bacteria, multisexual partners and drug abuse are predisposing factors for women prior to their pregnancy. Infected pregnant women may lose their fetuses in the form of abortion. Fetus retardation, early labor, immature fetus, infants with weight, genital HSV infections, malformations, and neonatal herpes diseases are resulted from maternal HSV infections during the pregnancy period. The risk of neonatal herpes transmission among infected pregnant women in their last trimesters is estimated up to 50%, while it is about 1% for pregnant women who are infected in early period of pregnancy. The results of several surveys indicate that, the mothers' bodies are not able to produce a high amount of antibodies for suppressing replicating viruses in the last trimester of pregnancy. The rate of HSVs infections among HIV positive pregnant women rises up to 4 times^(1,2,4,6,10).

Approximately 30% of newborns are infected by HSV-1; this shows a significant increase of HSV-1 infections via sexual intercourse among students with the age range of 16 to 21^(1,3,4,6,10).

Diagnosis

Although the majority of HSV infections are asymptomatic, in symptomatic infections, the first symptoms including lesions on vulva and within cervical area, vaginal secretions and discharges, and painful urination are observed between 48 hours to three weeks. Besides, the inner side of tights, hips and perianal area encompass blisters and ulcers.

More symptoms which are common among men and women are headache, fever, and myalgia.

Some malignancies like meningitis are demonstrated for the most in primary HSV-2, HSV-1 and recurrent HSVs infections, respectively.

The most concerned occurrence is the first genital disease regarding to HSVs infections during the period of pregnancy in pregnant women.

The primary infections in pregnant women are severe and may disseminate on skin and simultaneously involve inner organs and lead to encephalitis with a mortality rate of 50%.

Moreover, the primary HSVs infections rise up the possibility of transmission of infection to newborns by passing from vaginal area^(1,4,6).

Infected tissues or fluids may be used as clinical specimen for diagnosing the infection.

Culture media are known as a classical gold standard; however, the specificity and sensitivity of culture media is low and this method is time consuming.

Serological test may be suitable in recurrent HSV infections^(1,4,6,10).

Polymerase Chain Reaction (PCR) assays are modern molecular diagnostics which are rapid, sensitive, and specific.

PCR is useful for detecting asymptomatic HSV infections and the type of viral agent.

An advanced molecular diagnostic is DNA microarray technology.

This method is rapid, accurate, sensitive and specific.

Fluids and lesions are useful microbiological samples for PCR and DNA microarray techniques.

DNA microarray technique is preferred when there is an abundance of samples.

DNA microarray is able to detect and identify hundreds of thousands genes at the same time. But PCR doesn't have this ability⁽¹¹⁻¹³⁾.

Treatment

The best way for pregnant women to have healthy life and children is to prevent being infected.

Reporting the history of infections in the past, suppressing HSVs, cesarean section, early treatment of newborns, performing serological assays for screening the infection in the period of pregnancy are necessary⁽⁶⁾.

But if a mother is infected during her pregnancy, there are some antiviral drugs which must be administered for treatment: acyclovir, valacyclovir and famcyclovir.

Acyclovir and valacyclovir are common antiviral drugs which are used in infected pregnant women. Famcyclovir is not well known and the results regarding to its usage are not very clear. Naturally each antimicrobial agent has some side effects. Normally, a treatment period of 8.5 months is recorded for consuming the antivirals of acyclovir or valacyclovir.

Conclusion

Pregnancy is an important period for a mother and her future child. Pregnancy reduces the ability of immune system in women. Thus, it is important to have screening assays for probable infections. HSVs are well known agents for viral herpes which are transmitted via sexual intercourse. The rate of HSV-1 genital infections has increased which is directly correlated with sexual intercourse. So, multiple sexual partners, and unsecured sexual activities increase the risk of HSVs infections among pregnant women. A healthy sexual relationship guarantees a high quality life for mothers and their newborns. ■

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