Neonatal Herpes Prevention: Management Strategies During Pregnancy

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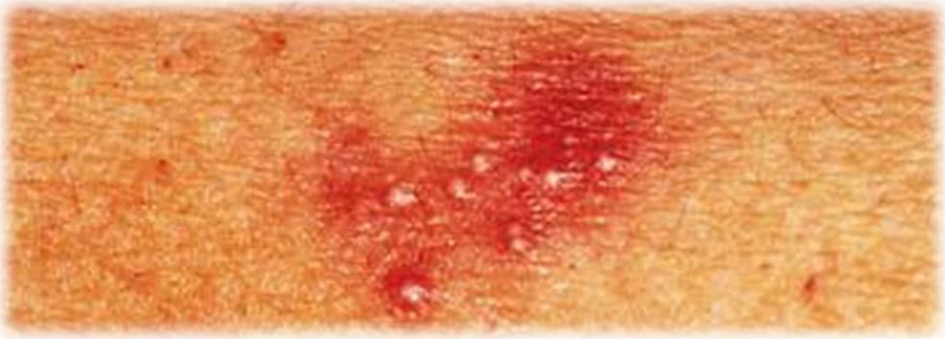
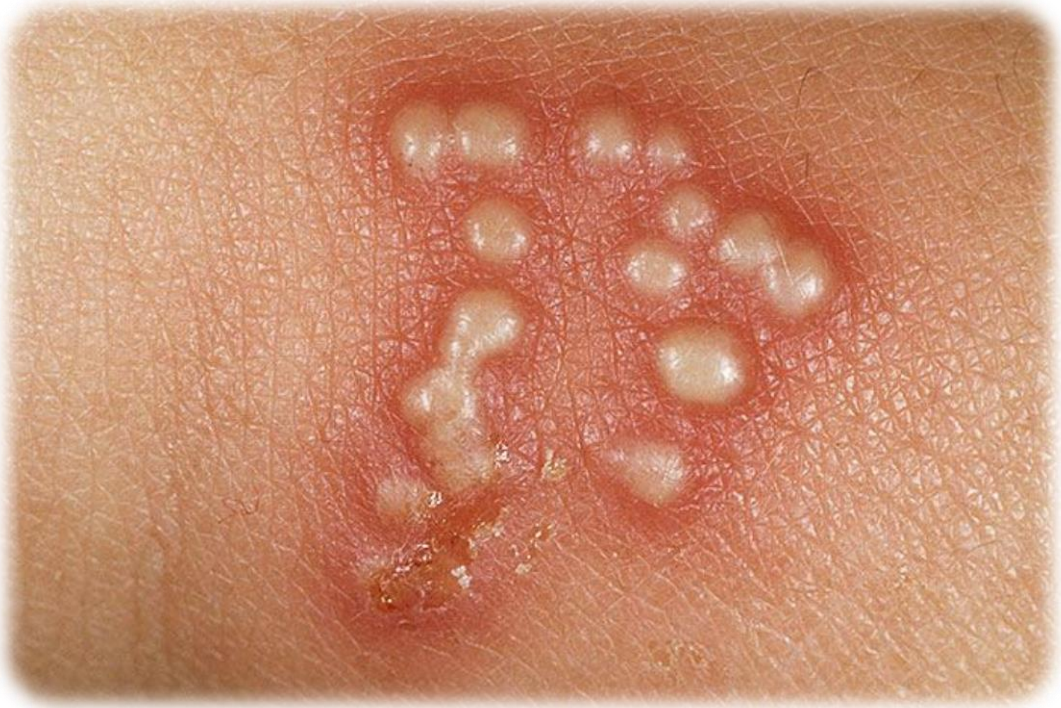
Learning Objectives

- Identify characteristics of genital herpes, including clinical manifestations and transmission.
- Recognize the occurrence of:
  - Genital herpes during pregnancy
  - Neonatal herpes
- Describe prevention strategies for neonatal herpes.



Genital Herpes



Why is genital herpes important?

- Most common sexually transmitted disease (STD) among the adult female population in the U.S
- Risk of maternal transmission to the newborn
- Approximately 1,500-2,000 new cases of neonatal infection diagnosed yearly
- Untreated neonatal infection = mortality rate of 60%
  - Even with prompt treatment survivors experience disability.
- **Need for preventive action!**

Researchers say…

- **Knowledge low among health care providers**, those at risk, general public, those with herpes:
  - Regarding diagnosis, transmission, neonatal herpes, antiviral therapy
- Those infected, their sex partners, and persons at risk:
  - **Receive suboptimal, insufficient health care information and prevention guidance**
- Prevention strategy recommended by CDC:
  - **Campaign to better educate health care providers** and general public about genital herpes and prevention

(Handsfield, Stone, & Graber, 1998)
(Romanowski, Zdanowicz, & Owens, 2008)

What patients want to know

- Diagnostic testing
  - Timing and accuracy of tests
  - How tests compare to one another
- Treatment strategies, including self-management & available antiviral therapies
  - Advantages and disadvantages
  - Effectiveness
- Risk of transmission
  - Which treatment strategies will prevent/reduce risk?

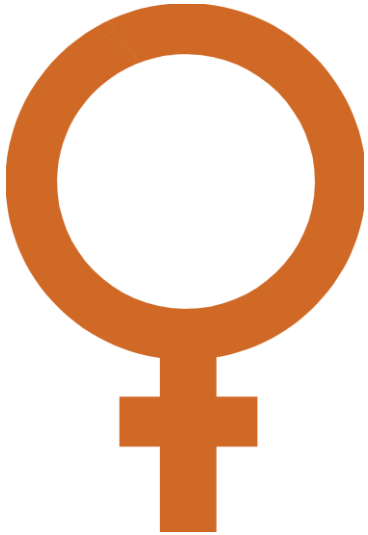
(Alexander & Naisbett, 2002)

What is genital herpes?

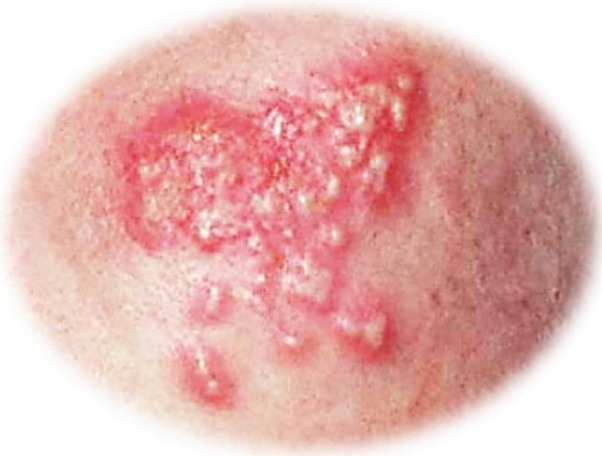
- Caused by herpes simplex virus type 1 (HSV-1) or herpes simplex virus type 2 (HSV-2)
  - Members of broad group of DNA viruses
- Transmission: Epithelial mucosal cells & skin breaks
- Lies dormant in nerve tissues in **latent stage**
  - Allows virus to cause disease recurrences over entirety of individual's life
- No cure
  - Virus remains in body
  - Intermittent viral reactivation with or without clinical symptoms (asymptomatic viral shedding) may occur.

RISK FOR ACQUISITION

- Females
- Increasing years of sexual activity
- Number of lifetime partners
- Past infection with STD's
- Less education
- Poverty
- Cocaine use



Transmission



- Through direct contact with lesions
- Typically during sexual activity
- Can occur if a sore is not present
  - Viral shedding occurs during periods of active outbreaks and when no symptoms are present
- By those unaware they have the infection, or are asymptomatic when transmission occurs

SIGNS AND SYMPTOMS

- Lesions appear 2-14 days after exposure
  - Small, tender, fluid-filled vesicles on genitals, buttocks, or other areas
  - Persist for 2-4 weeks without antiviral therapy
- Other symptoms may include:
  - Intense pain
  - Dysuria
  - Itching
  - Lymphadenopathy
  - Myalgia
  - Fever
  - Headache
  - Nausea
  - Malaise

Three statuses of infection

- **Primary**: Initial exposure to HSV
  - Antibodies do not exist at time of infection
  - Most significant HSV infection during pregnancy
  - Rates of neonatal herpes as high as 50%
- **Non-primary first-episode**: Individual with preexisting antibodies to either HSV-1 or HSV-2 experiences a first episode with opposite HSV type
- **Recurrent**: Infection in presence of preexisting antibodies against same HSV type
  - Symptomatic or asymptomatic
  - Transplacental antibodies decrease risk of transmission
  - Outbreak often preceded by a prodrome:
    - Individual feels pain in lower back, buttocks, thighs, or knees

Diagnostic Testing

- Polymerase Chain Reaction: Looks for pieces of viruses DNA in person's blood
  - Rapid and accurate
  - Identifies viral shedding in presence or absence of lesions
  - Distinguishes HSV-1 from HSV-2
- Viral culture: Fluid collection from intact blisters
  - Most accurate within 48 hours after appearance of lesions
  - Results available within a week of culture date
- Serology blood testing: Detects previous HSV infection through presence of antibodies in asymptomatic individuals

Approved Antiviral Medications

- Acyclovir, famciclovir, valacyclovir
- Inhibit viral replication in cells infected with HSV
- Minimize length of outbreak and reduce discomfort
  - Daily use decreases transmission risk in those experiencing frequent outbreaks.
- Primary infection: Prolonged treatment regimen
  - 10-day course of oral antiviral medication
  - Antibodies to reduce clinical symptoms not yet established
- Recurrent infection: Shorter antiviral therapy course

Test Your Knowledge

Signs and symptoms of genital herpes include:

A. Fluid-filled vesicles on the genitals, dysuria, itching

B. Painless, flesh-colored growths on the genitals

C. Small, painless open sore on the genitals

D. Foul-smelling vaginal discharge, lower abdominal pain

Test Your Knowledge

Genital herpes is primarily transmitted through contact with an infected person's:

A. Blood

B. Lesions

C. Feces

D. Urine

Genital Herpes: Pregnancy

Who is at risk?

- Maternal age ≤ 21 years
- Differing HSV status among partners (serodiscordant)
- Partner with oral herpes
- New partner within past year

**A study on neonatal HSV infection indicated that:*

- Demographic & clinical characteristics
  - **Could not be used to identify women at high risk of transmitting HSV to their infants**
- **Everyone should be educated on prevention of genital herpes acquisition!**

(Mark, Kim, Wald, Gardella, & Reed, 2006)

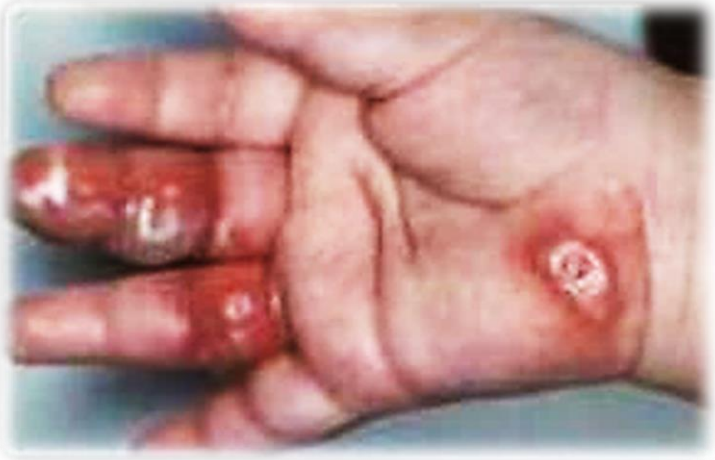
Primary Infection: Pregnancy

- Less prevalent than recurrent infection
- Significantly higher transmission rate
- Poses greater threats to mother and child
- Leads to high rates of spontaneous abortion and stillbirth in first trimester
- May cause premature birth and low birth weight later in pregnancy
- **Emphasis is placed on preventing:**
  - **Acquisition of primary infection during pregnancy**
  - **Transmission from mother with primary infection**

Neonatal Herpes

What is neonatal herpes?

- **Infection in a newborn in the first 28 days of life**



- Delayed diagnosis associated with high mortality
- Even with adequate treatment, permanent consequences such as cerebral palsy and developmental delays may still occur.

Neonatal Herpes: Transmission

- High among women who:
  - Are seronegative
    - Lack antibodies to suppress viral replication prior to labor
  - Acquire genital herpes close to time of delivery
  - Are asymptomatic with no known history of genital herpes

We must educate all patients!

TRANSMISSION: MOTHER *to* BABY

- **Intrapartum**: baby passes through mother's infected birth canal
  - Most frequent (80-90%)
  - Risk lessened when protective maternal antibodies cross placenta and exist in fetus
- **Intrauterine**: occur without baby passing through vagina, i.e. amniotic sac breaks few hours before birth
  - Very rare (1/100,000) due to acquisition of virus in utero
- **Postnatal**: infant contact with infected parents or health care providers
  - 5-15% of neonatal herpes infections

Test Your Knowledge

Demographic and clinical characteristics allow identification of women at high risk of transmitting HSV to their infants, permitting education targeted toward those at risk.

A. True

B. False

Test Your Knowledge

Neonatal herpes transmission is highest among:

A. Women who are seronegative
B. Women acquiring genital herpes close to time of delivery
C. Women who are asymptomatic
D. All of the above

Neonatal Herpes: Prevention

Neonatal Herpes: Prevention

- Relies on preventing:
  - Acquisition of genital herpes in late pregnancy
  - Infant exposure to herpetic lesions at time of delivery
- How can we do this?
  - Assessment
  - Screening
  - Antiviral therapy
  - Cesarean delivery
  - Education
  - Counseling

Assessment

- **Who?** All women
- **When?** Early in pregnancy, At first prenatal visit, At onset of labor
- **What?** History of genital herpes infection (including recent & prodromal symptoms), Partner history, Perineum examination
- **Screening via assessment & physical examination alone is unreliable.**
  - Viral shedding without clinically visible lesions is common.

Recommendations: Screening Pregnant Women

- USPSTF and ACOG **recommend against** screening asymptomatic women at any time during pregnancy.
- CDC **recommends** testing pregnant women who have:
  - Symptoms indicative of genital herpes
  - Partner with, or symptoms indicative of, genital herpes
- Women acquiring primary infection in first two trimesters:
  - Sequential viral cultures on genital secretions
  - Beginning at 32 weeks gestation
- **Screening doesn't detect those with highest risk of transmission to infant**
  - Women acquiring primary infection are initially seronegative.

Antiviral Use During Pregnancy: Is it safe?

- Increased risk for major birth defects **not found** in pregnant women being treated with acyclovir during first trimester
- Acyclovir may be administered to pregnant women:
  - Orally for primary infection or severe recurrent infection
  - Intravenously for severe infection
- Data pertaining to prenatal exposure to valacyclovir and famciclovir does not provide useful information on pregnancy outcomes.
- All three drugs labeled category B drugs:
  - No teratogenic effects discovered in animal studies
  - No or limited studies on humans available

Antiviral Suppression: Pregnant Women with Primary Infection

- Should receive antiviral therapy at initial outbreak, regardless of time of occurrence during pregnancy

*** We are often unaware of the presence of primary infection so antiviral therapy may not have useful implications for this population.**

Antiviral Suppression: Pregnant Women with Recurrent Infection

- Acyclovir or valacyclovir at 36 weeks' gestation until term:
  - Decreases risk of viral shedding during delivery
  - Decreases need for cesarean delivery

Cesarean Delivery

- Women with NO active genital herpes lesions or its prodrome at the onset of labor:
  - CDC **does not recommend** cesarean delivery
- Women WITH active genital herpes lesions (or early symptoms) at time of delivery:
  - CDC and ACOG identify **cesarean delivery as the current standard**

Pregnancy-related Procedures

- Transabdominal invasive procedures
  - May be performed on pregnant women with recurrent infection, even in presence of lesions
    - Chorionic villus sampling
    - Amniocentesis
    - Percutaneous umbilical cord sampling
- Invasive monitoring (fetal scalp electrode)
  - Increases risk for intrapartum transmission
  - Avoid to decrease fetal exposure to vaginal secretions
- Vacuum or forceps should only be used if necessary

Test Your Knowledge

Recommendations for assessment include:

A. All women, at the initial prenatal visit only

B. All women, at the onset of labor only

C. All women, at the initial prenatal visit & the onset of labor

Test Your Knowledge

The CDC recommends:

A. Screening pregnant women who have symptoms indicative of genital herpes

B. Cesarean delivery in the presence of active genital lesions

C. Both A & B

Prevention:
Education & Counseling

Education

- Best way to protect one's infant: be educated on the facts of genital herpes and how to protect oneself
  - **Informed educators are necessary!**
- Risk of neonatal herpes infection should be explained to each person, including men.
- Education of those affected and their sexual partners assists individuals to:
  - Cope with recurrent symptoms
  - Prevent sexual & perinatal transmission

Specific Educational Messages

- To lower one's risk of acquiring genital herpes:
  - Practice abstinence
  - Have a faithful, sexual relationship with one partner who has tested negative for genital herpes
  - Condom use
- Individuals should be knowledgeable on:
  - Various forms of birth control
    - Which methods do and do not protect against genital herpes
  - Symptoms of genital herpes
  - Actions to take should symptoms develop
- Genital herpes is not prevented by washing the genitals, urinating, or douching after intercourse.

Condoms

- Reduce the potential for transmission if used correctly and consistently
- Areas unprotected may still become infected
- Are not a complete barrier for the genital region
  - Even regular condom use does not eliminate all possibility of transmission.

"I think I have genital herpes…"

- Instruct your patient to **seek medical attention and treatment immediately** if symptoms characteristic of genital herpes develop.
- Follow provider's treatment orders.
- Complete all prescribed medication regardless of disappearance of symptoms.
- Abstain from sexual activity:
  - While being treated
  - While symptoms persist
- Tell all sexual partners so they can receive treatment.

"My partner has genital herpes…"

- Instruct patient to get tested to find out infection status
- Avoid sexual intercourse:
  - While partner is being treated
  - Beginning at onset of prodromal symptoms
  - Until a few days after lesions have disappeared
- Lesions and secretions should not come in contact with another's skin.
- Use condoms correctly & consistently throughout pregnancy even if male partner has no active lesions.

Counseling: Women & Their Partners

- Initial counseling at first visit is beneficial
  - Many patients benefit from learning about chronic aspects of genital herpes after acute illness subsides.
- Counseling should convey that, during pregnancy, new infections carry greater risks for both mother and child.
- Abstain from unprotected sexual intercourse, including oral-genital contact, in late pregnancy.

Counseling:
Pregnant Women Without Infection

- Abstain from intercourse, including oral and vaginal contact, during the third trimester of pregnancy with men who have genital herpes.

*** Changes in sexual behavior of pregnant women at risk, a universal and low cost strategy, are key to reduce acquisition of HSV during pregnancy.**

Counseling: Pregnant Women With Infection

- About risks of transmission to neonate
  - Recognize that risk of transmission exists, even in presence of no or rare clinical recurrences
- Breastfeeding mothers: instruct not to breastfeed if lesions are present on breast, including nipple
  - Milk may still be pumped or expressed by hand
  - Discard milk coming into contact while pumping

The most effective way to prevent genital herpes…

- **Is to abstain from intercourse or to only have sexual encounters with an uninfected individual in a monogamous relationship**

Test Your Knowledge

Counseling should reflect the fact that:

A. A lesion on the breast cannot transmit herpes to the infant

B. Unprotected sexual intercourse is safe throughout pregnancy

C. During pregnancy, new infections carry greater risks for mother and child

D. Low risk of transmission exists with new infections acquired late in pregnancy

Test Your Knowledge

The most effective way to prevent genital herpes is through condom use.

A. True

B. False

Take Home Messages

- You can best care for your patients by ensuring that women and partners receive accurate information about:
  - Transmission and diagnosis of genital herpes
  - Prevention of neonatal disease
  - Available management strategies

- Expected outcome of education and counseling on genital herpes:
  - Rewarding perinatal experience
  - Enabling expectant mother to make best decision concerning pregnancy and birth

QUESTIONS?

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