

Genital Herpes & Genital Warts

Note: All viruses mentioned in this lecture have..

DS-DNA!

دعاء قبل المذاكرة
اللهم اني أسألك فهم النبيين و حفظ المرسلين و الملائكة
المقربين, اللهم اجعل ألسنتنا عامرة بذكرك و قلوبنا
بخشيتك, إنك على كل شيء قدير و حسبنا الله و نعم
الوكيل)

INTRODUCTION

- ❑ **Genital Herpes and genital Warts are recognized as the main sexual transmitted viral infections that might be acquired by any types of sexual contact.**
- ❑ **Risk groups:**
 1. Adults who have multiple sexual partners.
 2. Immune compromised individuals.
 3. Infants who have infected mothers.
 4. Sexual child abuse

GENITAL HERPES

Etiology:

There are two species of herpes virus capable of causing **GENITAL HERPES**:

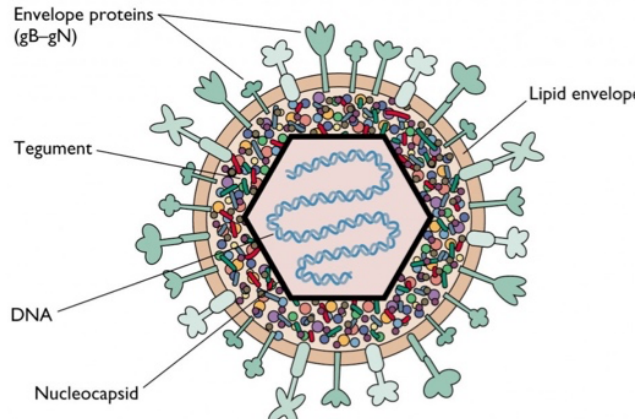
A. Herpes simplex virus type 2

B. Herpes simplex virus type 1 (It rarely causes genital herpes)

Pathogenesis:

- Primary infection occurs when HSV-2 infects epithelial cells covering the mucosa.
- The virus then migrates to the nearest ganglion (sacral ganglia) via neurons where it replicates and establish latency for life.
- Once its reactivated, it travels back through neurons to the site of the primary infection and causes recurrent infection.
- Once the virus enters the human body it remains for life (latency)

HSV-1 vs. HSV-2

	HSV-1	HSV-2
Prevalence	10%	90%
Structure	<ul style="list-style-type: none"> ❖ They are structurally very similar and share about 70% sequence homology. ❖ Family of herpesviridae. ❖ Virion consist of: <ul style="list-style-type: none"> ▪ Glycoprotein envelope ▪ Icosahedral capsid. ▪ Liner ds-DNA. 	 <p>The diagram illustrates the structure of a Herpes Simplex Virus (HSV) virion. At the center is a hexagonal nucleocapsid containing DNA. This is surrounded by a tegument layer, then an icosahedral capsid, and finally an outer lipid envelope studded with glycoprotein spikes (gB-gN).</p>
Associated with	<p>Encephalitis Keratoconjunctivitis Oral, Gingivostomatitis, Tonsillitis, Labialis Pharyngitis, Esophagitis, Tracheobronchitis Gladiatorum Genital Whitlow (an abscess in the soft tissue near a fingernail or toenail)</p>	<p>Meningitis Oral Pharyngitis Genital Perianal Whitlow Neonatal HSV</p>
Virus site in Latent Infection	Trigeminal ganglia	Sacral ganglia
Important Notes	HSV-1 can cause genital herpes infection after oral sex, also can be seen in cases of child abuse.	<p>-Homosexual men are more susceptible to HSV-2 infection.</p> <p>- An individual may have genital herpes caused by HPV2 and develops stomatitis if he/she rubs genitalia and then touches his/her mouth</p>

GENITAL HERPES

Clinical Features:

- Vary from asymptomatic to mild or severe painful episode.
- Symptoms appear 4 to 7 days after sexual exposure for the first time as:
 - A. Pain ,itching and burning and less common discharge from penis or vagina
 - B. fever , malaise,
 - C. dysuria
 - D. Inguinal lymphadenopathy.
 - F. Vesicular herpetic lesion (vesicle) localized to the cervix, vagina, vulva or perineum of the female or the shaft of the penis in the male. After 2-3 weeks ,existing lesions progress into ulcers and then crust and heal.
- Herpetic proctitis can be seen in homosexuals.
- Aseptic meningitis have been observed in about 10% of cases as extra genital presentation.



Clinical picture of recurrent genital herpes.

- ❖ Occurs after Re-activation by environmental or physiological factors such as:
Stress, Exposure to U.V. light, Menstruation, Pregnancy or any condition decreased the immunity.
- ❖ Associated with appearance of herpetic vesicles on the external genitalia. It also may include pain and itching.
- ❖ This can be as frequent as six or more episode a year ,the attacks are milder and shorter than primary episode.



Transmission of Genital HSV infection

1- Sexual transmission:

- The number of different sexual partners correlates directly with acquisition of HSV-2 in both sexes.
- Genital infection can be acquired by auto-inoculation from lesions elsewhere on the body by touching vesicular fluids from any herpetic lesions (HSV-1&2).

2- maternal infection :

A. 85%¹ Perinatal transmission (during delivery):

- if mothers have primary genital herpes 50%
- if mother have recurrent infection 8%

A. 10% Intrauterine (vertical) transmission

During first trimester → Maternal primary genital HSV infection of the mother can leads to: **spontaneous abortion.**

After 20 weeks of gestations → Maternal primary genital HSV infection which develops may induce malformation as:
Microcephaly, Jaundice, Hepatosplenomegaly, Chorioretinitis And Herpetic Vesicles On The Skin.

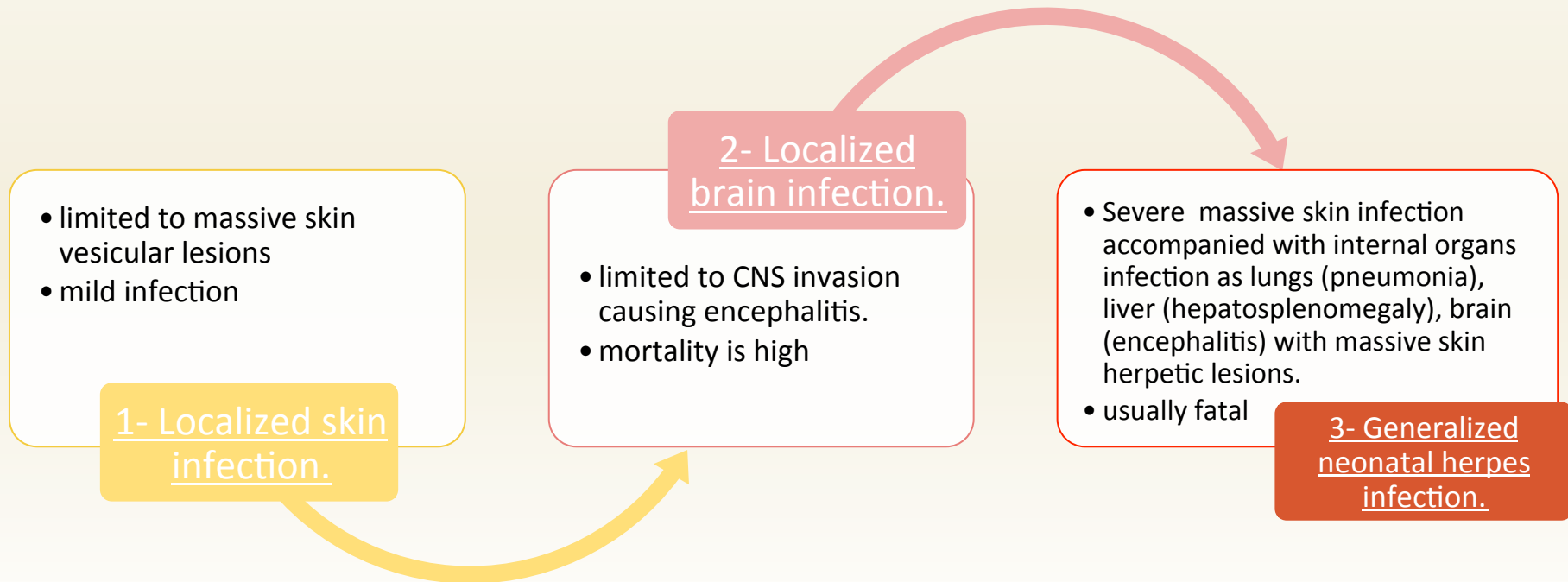
1: due to direct contact between the baby and infected maternal birth canal.

NEONATAL HERPES INFECTION

- ❖ Not a common condition
- ❖ Mortality is >70% when it happens.
- ❖ It occurs during labor and delivery through the vaginal canal when a mother is having a **primary active herpetic** lesion and shedding the virus, also vertical transmission during pregnancy.
- ❖ **This infection can lead to either:**
Massive herpetic skin lesions.



Generalized infection affecting skin and internal organs e.g; lungs, liver or brain.



GENITAL HERPES

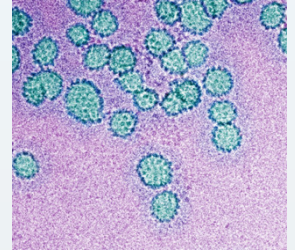
1- **ELISA:** serum sample is analyzed for detection the IgM Ab.

2- **Immunofluorescence (IF):** lesion scraping or vesicle fluid sample is analyzed for detection the Ag.

3- **Polymerase chain reaction (PCR):** CSF sample in case of neonatal herpes.

4- **Tissue culture:** vesicle fluid sample is cultured in cell line (Vero or Hep-2 cells) and then identified by the following:

- Observe the viral CPE
- Direct (IF)



Lab diagnosis

- No vaccine is available for HSV-2 infection.
- Avoid sexual contact with infected individuals.
- Abstain from making prohibited relations.
- Condoms are not 100% protective against genital herpes infection.
- **Caesarean section to avoid perinatal infection.**

Management

- **Acyclovir:**
 - ✓ The 1st choice therapy.
 - ✓ Suitable for pregnant women.
- Famciclovir.
- Valacyclovir.

Treatment

HUMAN PAPILOMAVIRUS

- Family of *Papillomaviridae*.
- Virion is small non-enveloped, and consist of:
 - Icosahedral capsid.
 - Circular ds-DNA.
 - They cause disease only in skin and mucous membrane.
- **Does not grow in tissue culture.**
- Resists detergent, heat, and can remain infectious in the environment for long time.

Hi

I'm *Human Papilloma Virus* types 16 and 18.

I'm from family *Papillomaviridae*.

I am sexually transmitted.

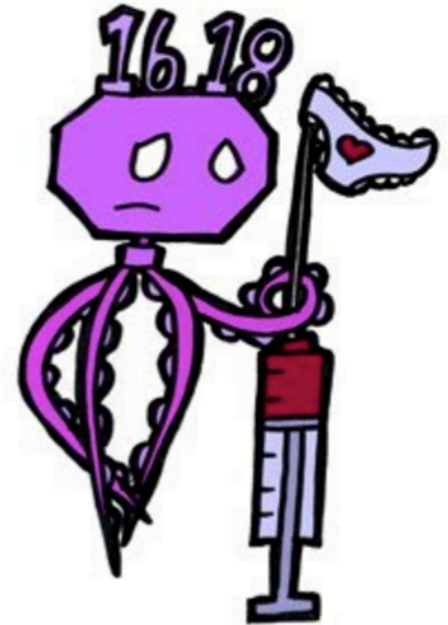
I am linked to cervical cancer.

My types 16 and 18 cause 70% of these.

Brothers 31, 33 and 45 cause some of the rest.

People have just found a vaccine against me.

Boohoo!



HUMAN PAPILOMA
VIRUS TYPES 16 + 18

HUMAN PAPILOMAVIRUS

Types of warts and HPV genotype

Cutaneous warts

Dr. Mona didn't focus on this type

The virus is transmitted from infected skin, either by direct contact or through fomites and enter its new host through abrasions. Swimming pools and changing rooms are fertile sources of infection, skin warts are most liable to affect young children.

- Common Warts → (HPV 2,4)
- Plantar Warts → (HPV1,2,4)
- Flat Warts → (HPV 3,10)



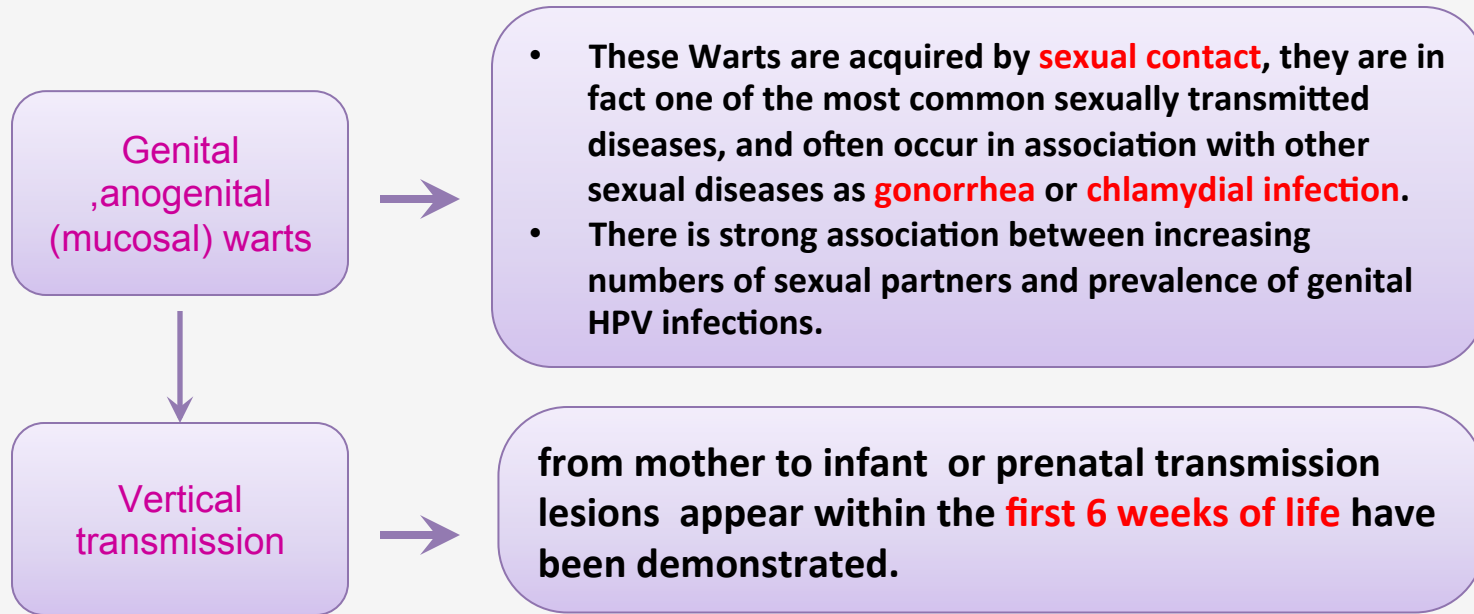
Anogenital or mucosal

- Condyloma acuminata → (benign) (HPV 6,11)
- Cervical carcinoma → (HPV 16,18,31,45)
- Penile and anal carcinoma in men → (HPV 16,18)
- Laryngeal Warts → (benign) (HPV 6,11)
- They may be transmitted to baby during delivery.



From infected birth canal of the mother

Genital Warts



Clinical symptoms of genital warts:

- Appear within **3-4 months** after infection **(I.P.)**.
- Warts size vary from small round to large complex mass.
- Found in the anogenital tract (inside or outside the genital and the anal areas of both males and females).
- Localized pain.
- Discomfort.
- **Abnormal vaginal bleeding and discharge.** (vaginal bleeding is due to friction)

Link between HPV and Cervical Cancer

HPV type 6 and 11
(Condylomata acuminata)

(benign) is unusual to become malignant, but they occasionally progress to squamous cell carcinoma

HPV 16 and 18

are more commonly associated with lesions of **great dysplasia** which involves all layers of stratified epithelium, and has high chance of progression to **metastasizing carcinoma & invasive cancer**.

- **Persistent HPV** infection is considered the main cause of cervical cancer, **HPV DNA** can be detected in most grades of premalignant lesions of the female and male genital tract.

Pap-smear:

is a screening test for detection abnormal epithelial cells of the cervix.

>90 of positive Pap-smear is due to **HPV**

HUMAN PAPILOMAVIRUS

Diagnosis

- External genital warts can be easily diagnosed by medical examination.
- Internal genital warts can be visualized by colposcopy.

Lab diagnosis:

PCR

- To detect HPV DNA (and also to know which serotype)

Pap-smear

- To identify abnormal epithelial cells of the cervix (cervical dysplasia)

In-situ DNA hybridization

- Used for HPV genotyping

HUMAN PAPILOMAVIRUS

Treatment

Dr. Mona said that this slide is not important

- Applied directly on external warts.
- Used for several weeks.
- Examples: Imiquimod, Podofilox.
- Podophyllin is applied by a doctor, but it is contraindicated in pregnancy.
- Trichloroacetic acid (T.C.A) is safe during pregnancy.

1- Topical treatment:

- Interferon alpha, 5-fluorouracil epinephrine gel.
- Could be taken for several weeks (8-12).

2- Injection treatment:

- freezing warts by liquid nitrogen
- suitable for small external warts

3- Cryotherapy:

- destroying warts by an electric current
- suitable for small warts

4- Electrocautery treatment:

- destroying warts by a focused light beam
- suitable for small and large warts

5- Laser therapy:

- removing warts by surgical tools.
- suitable for all warts

6- Surgical excision:

HUMAN PAPILOMAVIRUS

Prevention

There are two vaccines available **Gardasil** and **Cervarix** and both are:

- Recombinant viral-like particles with no DNA.
- Given in 3 doses at 0, 2, 6 months.
- Recommended for young individuals ages 9-26 yrs. old. (vaccines are not effective after age of 26 yrs.)
- Not given to pregnant women.

**Very
important**

Gardasil	Cervarix
Quadrivalent vaccine	Divalent vaccine
Provides protection against HPV genotypes 6,11,16,18 which cause genital warts and cervical cancer	Provides protection against HPV genotypes 16,18 which cause cervical cancer

Brief Comparison between HSV & HPV

Virus	Herpes simplex virus	Human papillomavirus
Envelope	Enveloped virus	Not enveloped
Incubation period	4-7 days	2-3 months
Culture	Culture is used for diagnosis	Does NOT grow on culture
Vaccine	Has NO vaccine	There is a vaccine

MCQs:

1-Infection with herpes simplex virus, a common human pathogen, is best described by which of the following statements:

- A- the CNS and visceral organs are usually involved.
- B-It rarely recurs in a host who has a high antibody titer.
- C-It can be reactivated by emotional disturbances or prolonged exposure to sunlight
- D-Initial infection usually occurs by intestinal absorption of the virus.

Answers:

- 1-C
- 2-B
- 3-D
- 4-A

2-One of the most common sexually transmitted diseases that may lead to cervical carcinoma is caused by which of the following viruses:

- A-Cytomegalovirus
- B-Papillomavirus
- C-Epstein-barr virus
- D-Herpes simplex virus

3-Human papillomavirus is associated with all the following tumors EXCEPT:

- A-Plantar wart
- B-Cervical cancer
- C-Condyloma acuminatum
- D-Hepatic carcinoma

4-The first choice of therapy to treat HSV IS:

- A-Acyclovir
- B-Famciclovir
- C-Valacyclovir
- D-Abacavir

SAQs:

1-Name the three forms of neonatal herpes infection:

- 1-Localized skin infection.
- 2-Localized brain infection.
- 3-Generalized neonatal herpes infection

2-Which type of HPV vaccine can provide protection against genotypes 6,11,16 and 18:

Gardasil

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دعاء بعد المذاكرة
(اللهم إني استودعتك ما قرأت وما حفظت وما
تعلمت فرده لي عند حاجتي إليه إنك على كل شيء
قدير وحسبنا الله ونعم الوكيل)