Genital Herpes & Genital Warts [DNA Vs]

- 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.
  4- Infants who have infected mothers.
  3- Sexual child abuse.

GENITAL HERPES HSV **[herpesviridae – GP envelope – Icosahadral – Linear ds-DNA]**	

Cause	• **Herpes simplex virus type 2 (HSV-2)** → **90% -** responsible for **Lowe**r part of the body + neonatal
	• Herpes simplex virus type 1 (HSV-1) → 10% - responsible for **upper** part of the body
	• Both are **very similar** and share 70% sequence homology
	• The Herpes viruses has the ability to induce **latent infection**
	  ○ **HSV (1&2)** → **NERVE CELLS.**
	  ○ **HSV-1** → **Trigeminal ganglia**
	  ○ **HSV-2** → **Sacral ganglia**

Transmission	**1- Sexual transmission:** • The number of different **sexual partners** correlates directly with acquisition of HSV-2 in both male & female. • **Homosexual men** are more susceptible to HSV-2 infection. • 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). .** • **HSV-1** can cause genital herpes infection after **oral sex**, also can be seen in cases of **child abuse.** **2- Perinatal transmission (during delivery):** • The majority of maternal infection **(85%)** occurs **during delivery**, due to direct contact between the baby and infected **maternal birth canal.** • The risk of **perinatal transmission** is usually occurred in **about 50%** of mothers have **primary** genital herpes, while the **risk is 8%** if mother have **recurrent** infection. • This infection can lead to either **massive** herpetic skin lesions or **generalized infection** affecting skin and internal organs e.g; lungs , liver or brain . • **To avoid perinatal infection we do Caesarean section.** **3-Intrauterine(vertical) transmission (10%):** • Maternal primary genital HSV infection of the mother during **first trimester** can leads to **spontaneous abortion**. • Maternal primary genital HSV infection which **develops after 20 weeks** of gestations may induce **malformation as**: **microcephally, jaundice, hepatosplenomegally, Chorioretinitis and herpetic vesicles on the skin.**

Patogenesis [HSV-2]	• **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)

Primary genital infection	• Vary from asymptomatic to mild or **sever painful episode.** • Symptoms appear **4 to 7 days after sexual** exposure for the first time as : **Pain ,itching and burning and less common discharge from penis or vagina.** • **fever , malaise, dysuria,** • **Inguinal lymphadenopathy** • Vesicular herpetic lesion (vesicle) localized to the cervix, vagina, vulva or perineum of the female or the shaft of the penis in the male ,Herpetic proctitis can be seen in homosexuals. • After 2-3 weeks ,existing lesions **progress into ulcers** and then **crust** and heal . • Aseptic meningitis have been observed in about 10% of cases as extra genital presentation **HSV-1 → encephalitis** **HSV-2 → meningitis**
Recurrent genital infection	• **Occurs after reactivation** by environmental or physiological factors such as stress, exposure to U.V. light, menstruation, pregnancy or any condition **decreased the immunity.** • This can be as frequent as **six or more episode a year** ,the attacks are **milder** and shorter than primary episode. • Accompanied with the appearance of **herpetic vesicles** on the external genitalia. • Symptoms may include **pain and itching**. Less painful than primary inf

NEONATAL HERPES HSV **[herpesviridae – GP envelope – Icosahadral – Linear ds-DNA]**	
General	• Is **not a common** condition, but the 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 in small % as vertical transmission during pregnancy. • It may **spread** to other organs such as **lungs, liver, brain**
Forms	**1- Localized skin infection:** • **limited** to massive skin vesicular lesions • **mild** infection **2- Localized brain infection**: • limited to **CNS** invasion causing encephalitis. • mortality is **high** **3- Generalized neonatal herpes infection:** • **Severe** massive infection of the skin accompanied with **internal organs infection** as lungs (pneumonia), liver (hepatosplenomegally), and brain (encephalitis) with massive skin herpetic lesions - usually **fatal**

Dx	**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:** * GOLD STANDARD to be 100% sure * vesicle fluid sample is cultured in cell line (Vero or Hep-2 cells) and then identified **by the following:** - Observe the viral **CPE** - Direct immunofluorescence **(IF)**
Management for neonatal & genital	**No vaccine is available** to prevent HSV-2 infection, and thus the best way to control the HSV infection is by: **Avoid sexual contact with infected individuals** **Abstain from making prohibited relations.** **Note: 1- Condoms are not 100% protective against genital herpes infection.** 2- To avoid perinatal infection we do **Caesarean section.** **3- Tx: Acyclovir even in pregnant women**

Human Papillomavirus HPV **[Papillomaviridae – nonenvelope – Icosahadral – circular ds-DNA]**	
General	• Small virion causing disease only in **skin and mucous membrane**. No viremia • **Does not grow in tissue culture.** • Resists detergent, and heat and can remain infectious in the environment **for long time**
Types	**1- Cutaneous warts:** • The virus is transmitted from infected skin ,either by direct contact or through fomits 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)** Not really important ○ **Flat Warts** → **(HPV 3,10)** **2- Ano-genital or mucosal: important to know the numbers** • **Condyloma acuminata** → **(benign HPV 6,11)** • **Laryngeal Warts** → **(benign HPV 6,11)** in babies from infected mother • **Cervical carcinoma** → **(HPV 16,18, 31,45)** • **Penile and anal carcinoma in men** → **(HPV 16,18)** • They may be transmitted to baby **during delivery**
Transmission	• These Warts are acquired by **sexual contact** ,they are in fact one of the **most common** sexually transmitted diseases, and often occur in **association with other sexual diseases** as **gonorrhea or chlamydial infection.** • There is strong association between **increasing numbers of sexual partners and prevalence of genital HPV infections.** • **Vertical transmission:** from mother to infant or prenatal transmission lesions appear within the first 6 weeks of life have been demonstrated.
Clinical	• Appear after **3-4 months** after infection **(I.P).** high • 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 sexes). • **Localized** pain • Discomfort • Abnormal vaginal **bleeding and discharge**.

HPV and cervical cancer	• **HPV type 6 and 11(Condylomata acuminata)** 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. • **> 90%** of positive Pap-smear is due to HPV infection. • **Pap-smear:** is a screening test for detection abnormal epithelial cells of the cervix.
Dx	• External genital warts can be easily diagnosed by medical examination. • Internal genital warts can be visualized by colposcopy. • **Lab diagnosis:** 1- **Polymerase chain reaction (PCR) is used to detect HPV DNA.** 2- Pap-smear test is used to identify abnormal epithelial cells of the cervix (cervical dysplasia). 3- In-situ DNA hybridization is used for HPV genotyping.
Tx **Not important**	**1- Cryotherapy:** • freezing warts by liquid nitrogen • suitable for small external warts **2- Elctrocautery treatment:** • destroying warts by an electric current • suitable for small warts **3- Laser therapy:** • destroying warts by a focused light beam • suitable for small and large warts **4- Surgical excision:** • removing warts by surgical tools • suitable for all warts **5- Topical treatment:** • Applied directly on external warts. • Used for several weeks. • **Examples**: ○ **Imiquimod, Podofilox.** ○ **Podophyllin** is applied by a doctor and contraindicated in pregnancy. ○ **Trichloroacitic acid** (T.C.A) safe in pregnancy. **6- Injection:** • Interferon alpha, 5-flurouracil epinephrine gel. • Could be taken for several weeks (8-12).
prevention	• There are **two vaccines** available 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.** ○ **Not given to pregnant women.** • **Gardasil**, a quadrivalent vaccine, provides protection against HPV genotypes **6,11,16,18** which **causes genital warts**. • **Cervarix,** a divalent vaccine, provides protection against HPV genotypes **16, and 18** which **causes cervical cancer.**