



HUMAN IMMUNODEFICIENCY VIRUS (HIV)

GENERAL PROPERTIES:

- It belongs to retroviruses.
- The virus has spherical shape.
- Genome of virus is ssRNA.
- It has icosahedral symmetry.
- It has envelope with spikes.

BIOLOGICAL STRUCTURE OF HIV:

-Envelope: the virus is surrounded by bilayer lipid envelope that is covered by projected spikes (glycoprotein: gp41, gp120) which may act as attachment sites (N.B : HIV undergoes from high rate of antigenic variation in envelope glycoproteins).

-Capsid proteins: consist of several proteins as capsid protein (p24) and matrix protein (p17)

-Genome consists of two copies of (+) ssRNA (diploid).

Core protein: contain many enzymes as reverse transcriptase (R tase) integrase

TWO TYPES OF HIV:

HIV-1: has 9 subtypes it is responsible for most cases of acquired immunodeficiency syndrome (AIDS)

HIV-2: has 5 subtype it is less commonly and less virulent AIDS was first described as disease in 1981 and the virus was isolated by end of 1983



Medical Laboratory Techniques Department

Title of the lecture: HUMAN IMMUNODEFICIENCY VIRUS (HIV)

Dr.: Marwa Fadhil Alsaffar

MarwaAlsaffar @mustaqbal-college.edu.iq



MODE OF TRANSMISSION

Sexual contact : HIV has high affinity to semen and vaginal secretion

therefore the virus can be transmitted by anal or vaginal intercourse among homosexual and heterosexual individuals

parenteral transmission : it can be transmitted by blood transfusion or by needles or syringes such as intravascular drugs uses (IVDU)

mother to child : HIV can be transmitted to neonate across placenta or during delivery or breast milk

other methods : for transmission of HIV fluids or body such as urine, tear, saliva

Bacterial infections such as TB, syphilis, salmonella infection, viral infection

EBV, CMV, hepatitis and herpes simplex, fungal infection as candida albicans (cause oral thrush), protozoa infection pneumocystis carinii (cause pneumonia)

DX:

Cell count of WBC for determination of T4/T8 ratio

Isolation of virus by cell culture (in difficult)

serologic for detection of HIV antibodies by ELISA, radioimmunoassay

(RIA) and immunofluorescent test (IFT)

PCR has high sensitivity and specificity to detect HIV genome in infected

Cell



Medical Laboratory Techniques Department

Title of the lecture: HUMAN IMMUNODEFICIENCY VIRUS (HIV)

Dr.: Marwa Fadhil Alsaffar

MarwaAlsaffar @mustaqbal-college.edu.iq



CONTROL

1. prevention : safety sex practice
2. routine screening of donated blood for HIV
3. needles exchange program for IVDUS teeth brush razoretc should be not Used
4. avoidance pregnancy breast –feeding if infected mother

TREATMENT WITH ANTIVIRAL THERAPY:

Viral binding inhibitors such as CD4-IgG chimera

rtase hibitoors :azidothymidine (AZT)

protein synthesis inhibitors ritonavir

Viral assembly inhibitors interferon –Alfa

VACCINATION:

No vaccine available (because changes in antigenicity of HIV).

Gene therapy is developed now.