ACQUIRED IMMUNODEFICIENCY SYNDROME (AIDS)

Staff Members of Tropical Medicine and Gastroenterology


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ACQUIRED IMMUNODEFICIENCY SYNDROME (AIDS)

- **Definition** :

AIDS actually refers to the clinically evident late and end stage of HIV disease, but in lay terms is often used as an equivalent of HIV infection.

- **Cause**:

Caused by Human Immunodeficiency Virus (H.I.V) which is a Lentivirus, a subgroup of retroviruses. These have the ability to transcribe their RNA genome to DNA one.

- **There are 2 types of HIV**

- HIV-1 : found in America and Europe and is more aggressive.
- HIV-2: found in central Africa.

- **Modes of transmission :**

1-Sexual intercourse: homosexual or heterosexual intercourse (anal, vaginal)

2- **Contaminated blood and blood products:**

- Blood transfusion.
- Blood products e.g. factor VIII.

3- **Contaminated needles and syringes.**

4- **Mother to Child**:

- In utero.
- During childbirth.
- Breast milk.

5- Organ and tissue donation:

- Semen.
- Kidney, skin, and corneas.
- Bone marrow.

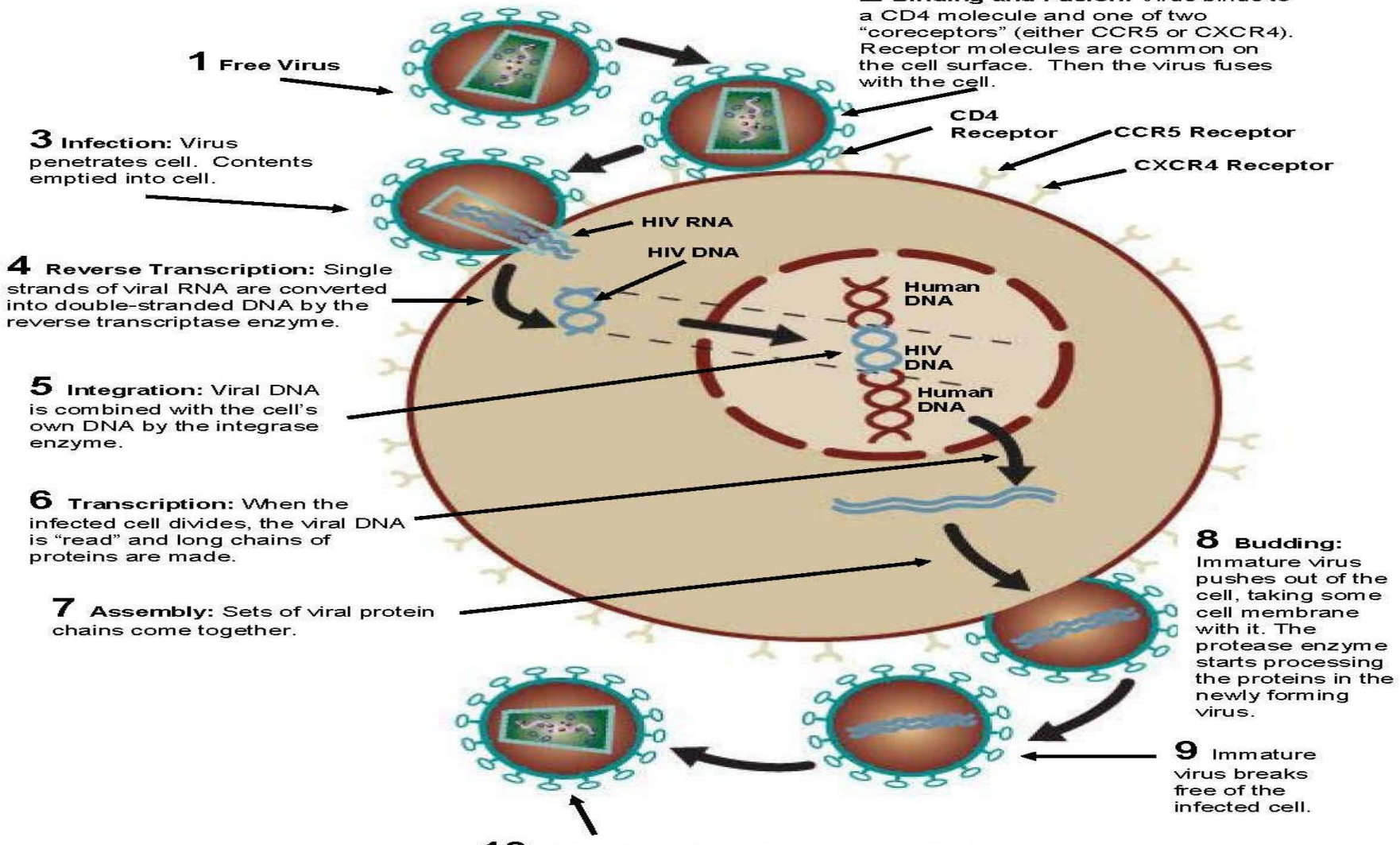
- Sweat, urine, saliva and tears are non-infectious under ordinary circumstances because the virus is hardly detected in these fluids.
- There is no evidence that HIV is spread by social or household contact nor by blood-sucking insects such as mosquitoes and bed bugs.

- **Pathogenesis:**

- The manifestations of HIV disease are related to progressive destruction of the immune system (mainly T-helper cell or CD4) or direct viral effect (CNS).
- Once the virus enters a cell, HIV can replicate & cause cell fusion or death by unknown mechanism .
- In many cases, a latent state is established with integration of the HIV genome into the host cell genome .
- With increasing duration of infection, The number of CD4 Lymphocytes fall. Other defects in the immune system includes infection of B-lymphocytes & macrophages .

AIDS InfoNet www.aidsinfonet.org Fact Sheet Number 106

HIV LIFE CYCLE



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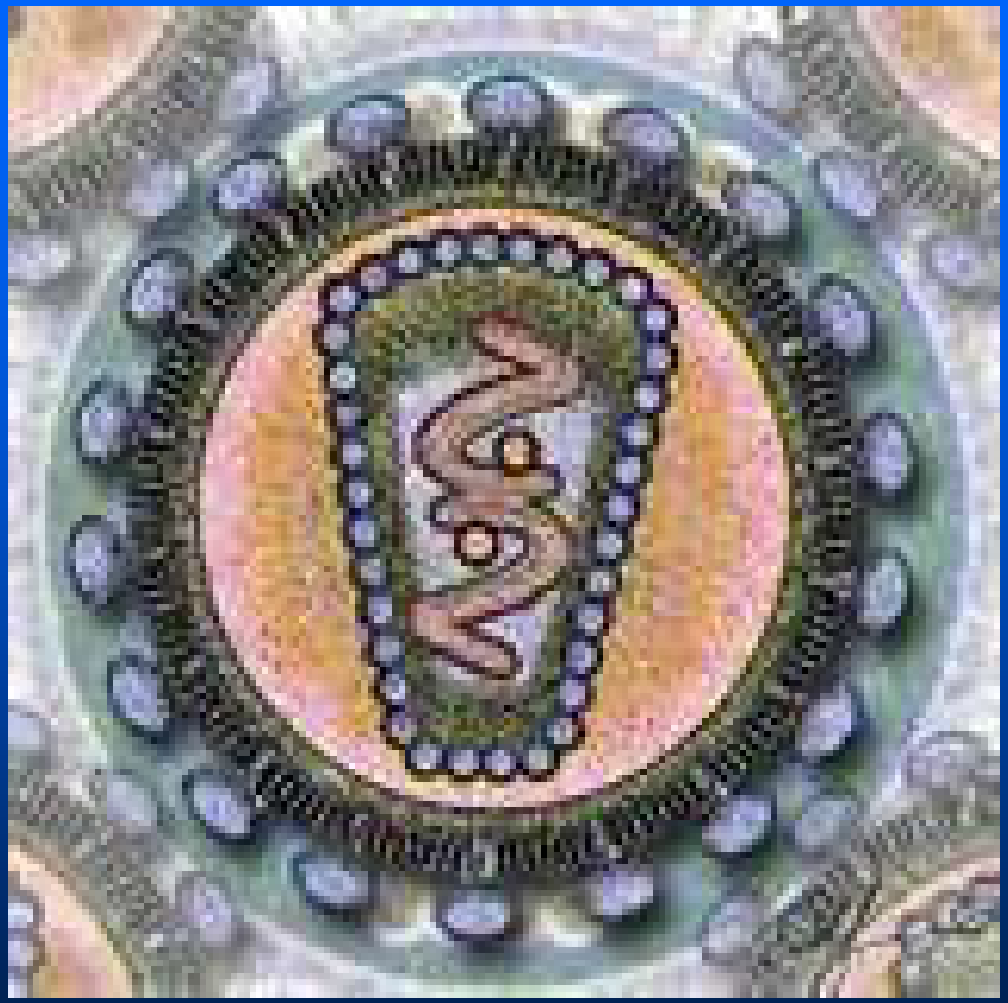
Fact Sheets can be downloaded from the Internet at http://www.aidsinfonet.org



The mature virus

Clinical picture

Early stage infection

1) (Group I): Acute infection after 3-6 weeks incubation period. usually transient.

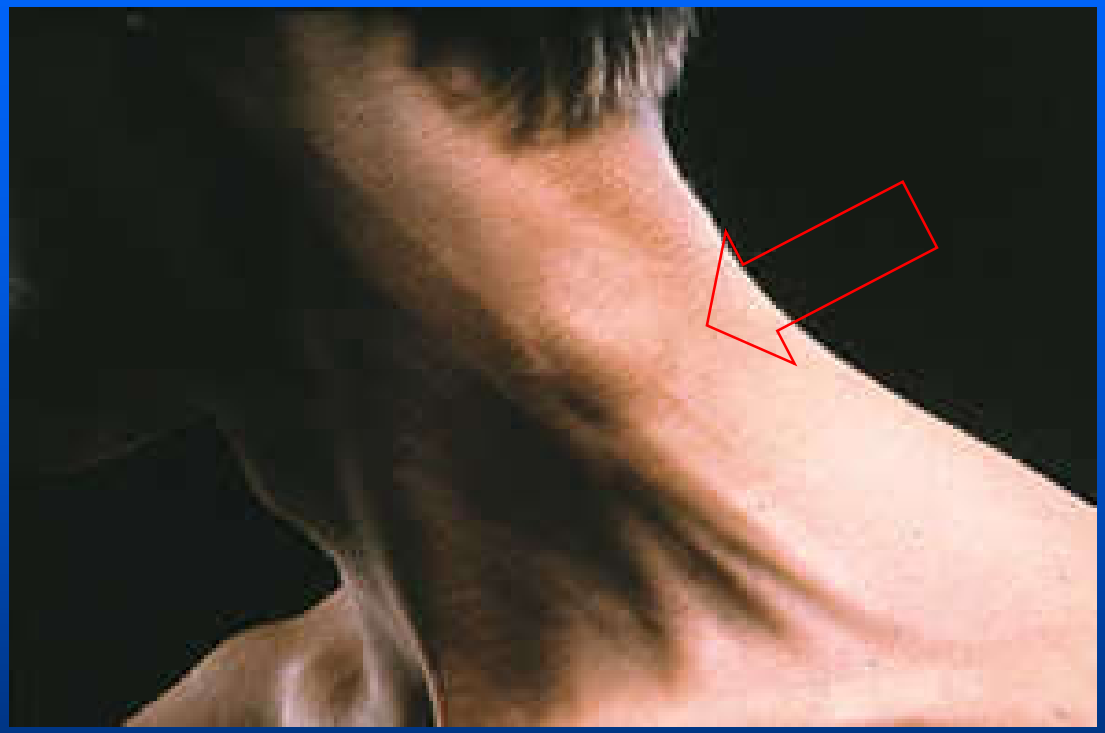
- The earliest clinical presentation may be symptoms are of a glandular fever or flu-like illness with a sore throat, malaise, fever, maculo-papular rash.
- Lymph node enlargement, diarrhoea, arthralgia
- Occasionally encephalopathy, neuropathy or meningitis.

2- Group II: Asymptomatic infection.

Symptoms and signs usually resolve, and patients enter a prolonged phase in which they may remain asymptomatic but are potentially infectious.

3- Group III: Persistent generalized lymphadenopathy; after 3 to 10 years.

There is an insidious and variable progression, in which there is lymph node enlargement, tonsillar enlargement, episodes of unexplained fever.



Painless lymph node enlargement in HIV infection.

Advanced HIV diseases

4- Group IV: Other diseases, usually after 11 years.

- Conistitutional:

  Major constitutional symptom complexes

  These include malaise, fever, night sweats, arthralgia, diarrhoea and weight loss

- Neurological involvement:

  Myelopathy and peripheral neuropathy, for which the only explanation is HIV infection.

- Opportunistic infections

Opportunistic infections

- *Pneumocystis carinii* pneumonia
- Chronic cryptosporidiosis
- Toxoplasmosis
- Extra-intestinal strongyloidiasis
- Isosporiasis
- Cryptococcosis
- Candidiasis (oesophageal, bronchial, pulmonary)
- Histoplasmosis
- *Mycobacterium avium intracellulare* or *M kansasii*
- Cytomegalovirus
- Herpes simplex

- Secondary cancers:

- Kaposi's sarcoma.
- Non-Hodjkin's lymphoma.
- Primary cerebral lymphoma.

HIV-Related Malignancy

Kaposi's Sarcoma

Non-Hodgkin's lymphomas

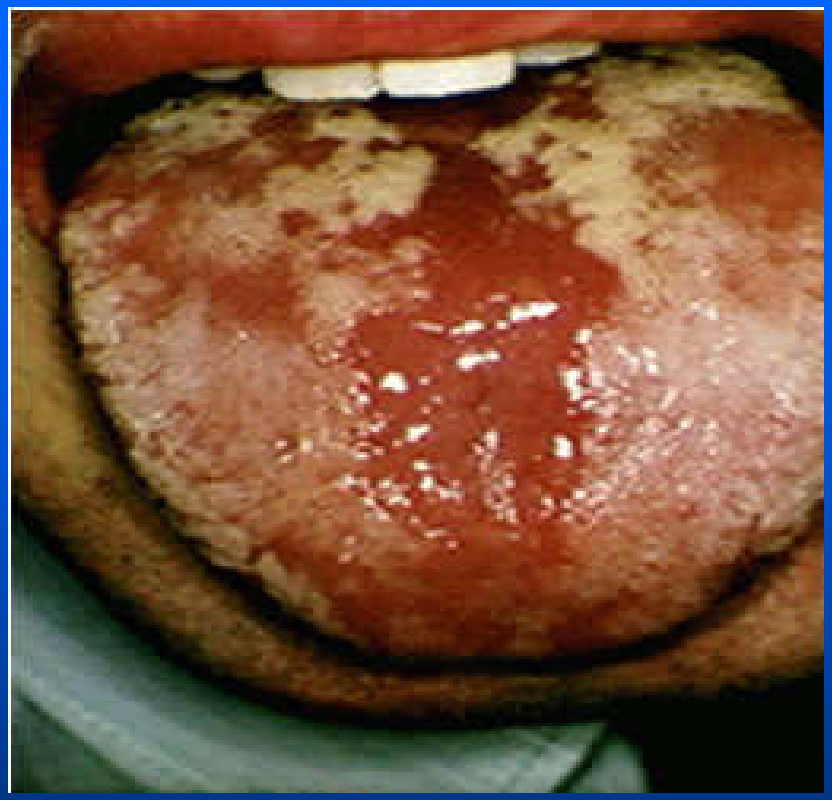
Primary cerebral lymphoma

Hairy Leukoplakia Caused by E.B.V

- **Clinical picture:**

1- GIT manifestations of AIDS:

- Oral:
  - Oral candidiasis.
  - Hairy leukoplakia
  - Oral ulcers (due to Herpes simplex virus).
  - Papilloma and condylomata (due to Human paiplloma virus).
  - Kaposi's sarcoma.
  - Lymphoma.



Extensive oral infection with Candida albican in a patient with HIV infection.

-Oesophageal:

- Candidiasis.
- Leukoplakia.
- Ulceration.
- Herpes infection.
- CMV infection.
- Kaposi’s sarcoma.
- Lymphoma.

-Gastric:

- Reduced acid secretion.
- Reduced gastric juice volume.
- Reduced pepsin output.

The cause of gastric lesions may be infections as cytomegalovirus, campylobacter pylorides, cryptosporidium or neoplasms as Kaposi;s sarcoma.

Intestinal manifestations:

AIDS enteropathy:

- Direct HIV infection to intestinal immune system leading to secretory diarrhea.
- Partial villous atrophy.
- Autonomic neuropathy.
- Bacterial colonisation
- Parasitic infestation (cryptosporidium, Giardia lamblia, Isospora belli, E. Histolytica).

2- Chest manifestaions:

-Pneomcystis carinii pneumonia.

- It is a protozoan widely distributed in animals.

- The diagnosis is by transbronchial biopsy or lavage and examination using silver staining technique.

- Bacterial pneumonia

- Caused by streptococcus, staphyococcus aureus, Mycobacterium tuberculosis, Mycobacterium avium intracellulare.

- Others: as cytomegalovirus, candida, Kaposi's sarcoma, and lymphoma.

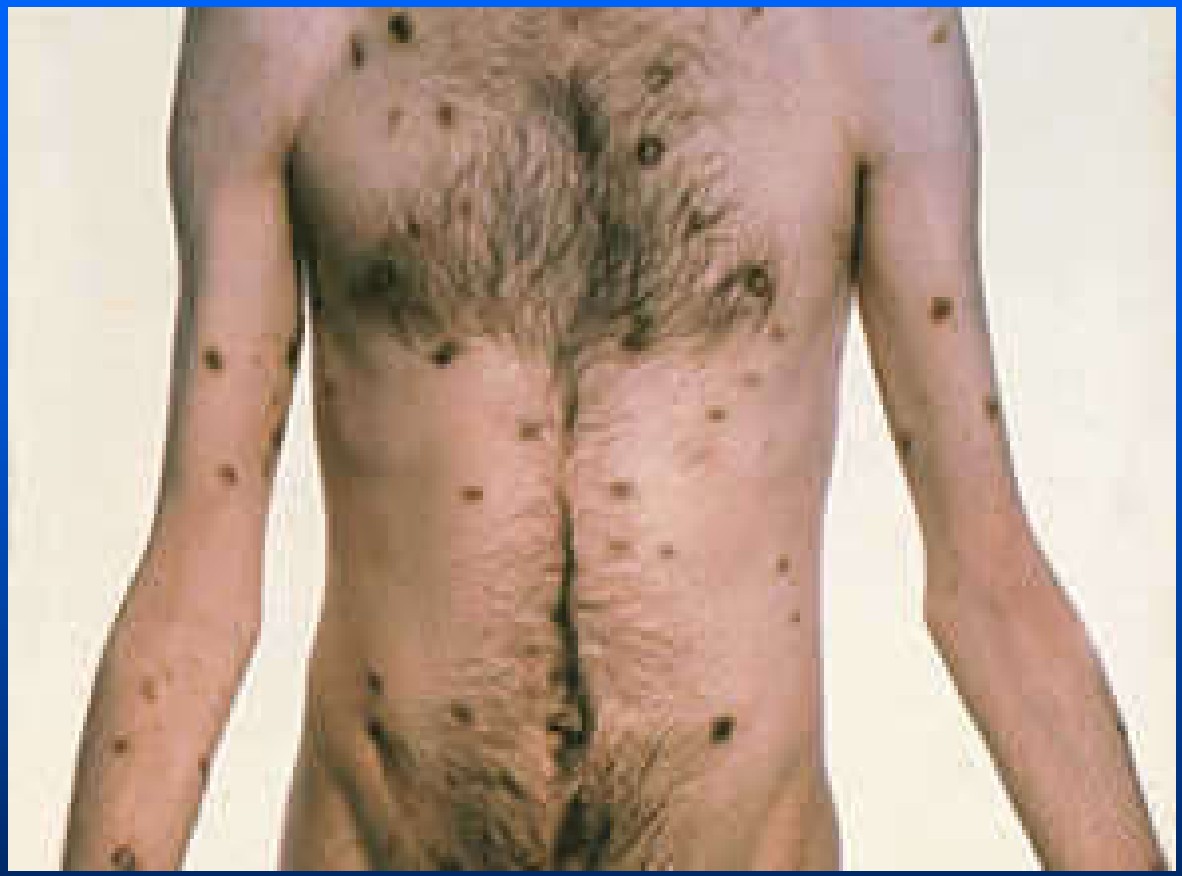
3- Neurological manifestations:

-Encephalopathy

- Myelopathy and acute transverse myelitis.
- Neuropathy: mostly peripheral sensory neuropathy.
- Encephalitis
- Meningitis: most commonly caused by cryptococcus neophormans.
- Toxoplasosis.
- CNS lymphoma.

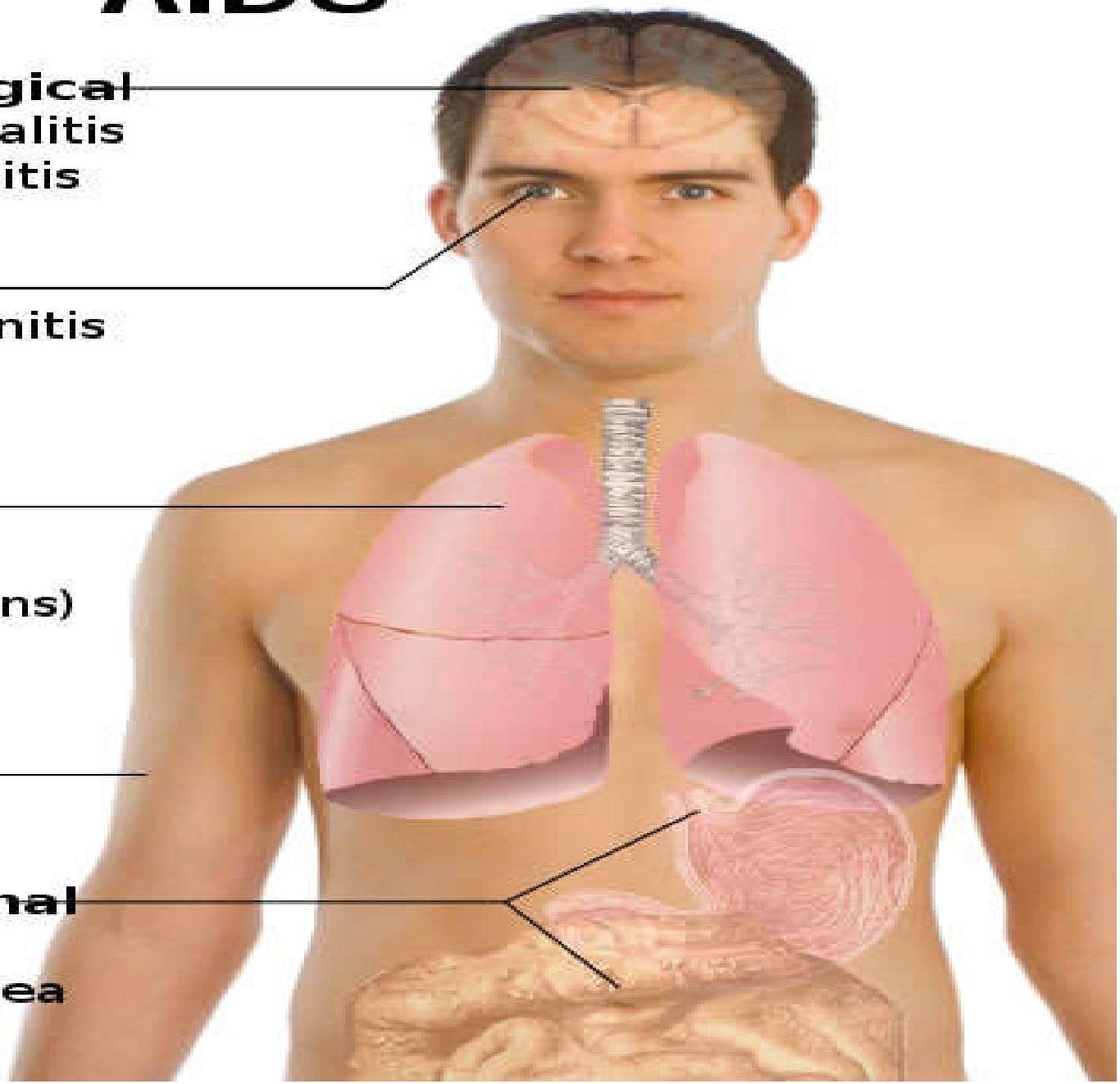
Kaposi's sarcoma

- Kaposi's sarcoma: Common tumor in AIDS patients. It develops as multiple, small dusky purple-red or purple nodular, painless lesions of the skin or buccal mucosa, but may also be found anywhere in the gastrointestinal tract or bronchial mucosa.



Kaposi's sarcoma is a common complication in patients with AIDS.

Main symptoms of AIDS



Neurological
- Encephalitis
- Meningitis

Eyes
- Retinitis

Lungs
- Pneumocystis pneumonia
- Tuberculosis (multiple organs)
- Tumors

Skin
- Tumors

Gastrointestinal
- Esophagitis
- Chronic diarrhea
- Tumors

Diagnosis:

A) Clinical suspicion:

- The presence of at least 2 major symptoms and at least 1 minor symptom
- Major symptoms include:

1- Unexplained fever for more than 1 month.

2- Unexplained diarrhea for more than 1 month.

3- Unexplained weight loss greater than 10% of previous weight.

- Minor symptoms include:

1- Presence of maculopapular rash.

2- Oral candidiasis.

3- Herpes zoster.

4- Aggressive uncontrolled herpes simplex.

5- Unexplained cough for more than 1 month

6- Enlarged lymph nodes in more than one extra-inguinal site.

B) Laboratory

- CBC which shows anaemia, neutropenia, thrombocytopenia are common with advanced HIV infection, lymphopenia especially T cells, ↓CD4 /CD8 ratio.
- HIV ELISA : a screening test for HIV

  Sensitivity > 99.9%. To avoid false positive results repeatedly reactive results must be confirmed by Western blot technique
- Polymerase chain reaction: is very specific for DNA replication.

Treatment :

-Anti retro viral drugs:

- reverse transcriptase inhibitors

- Nucleoside analogues as →Zidovudine (AZT), Lamivudine.

- Nonnucleoside analogues as nevirapine

- Protease inhibitors as saquinavir, indinavir.
- Ganciclovir: is the drug of choice for CMV infection.

- -Acyclovir: for herpes simplex virus infection topically, orally or intravenously.
- Desciclovir for therapy of hairy leukoplakia.
- -Anti protozoal.
- -Anti fungal.
- -Anti TB.

Prevention:

Prevention of the spread of HIV infection involves:

1- Screening of blood donors,

2- Advice on safer sexual practices,

3- Measures to curtail intravenous drug abuse and the provision of sterile syringe and needle


Thank You