SAWA UNIVERSITY

# أسس الطب الباطني
# AIDS


Sawa University — جامعـــــة ســـــــاوة الاهلية

College of health and medical techniques — كليـــــة التقنيـــات الصحيـة والطبيـة

Department of — قسم تقنيـــات التخديـــــــر

Anesthesia.....2nd..... Stage — ..... المرحلـــــــــــــة ..الثانية

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نظـــــــري — Theoretical

محاضرة رقم ..12..... — Lecture No. 12……..

# AIDS

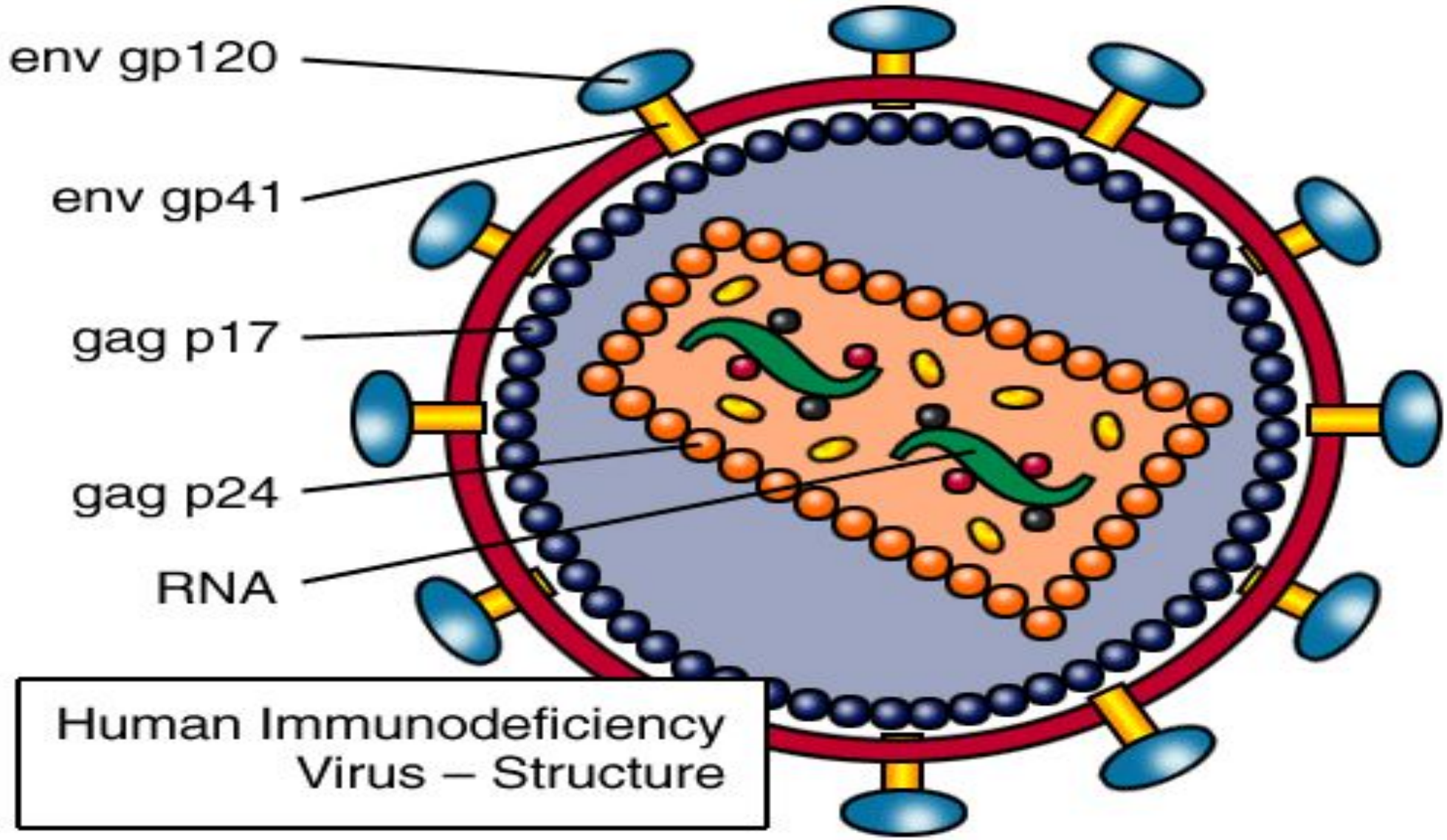
## (ACQUIRED IMMUNE DEFICIENCY SYNDROME)

# DEFINITION

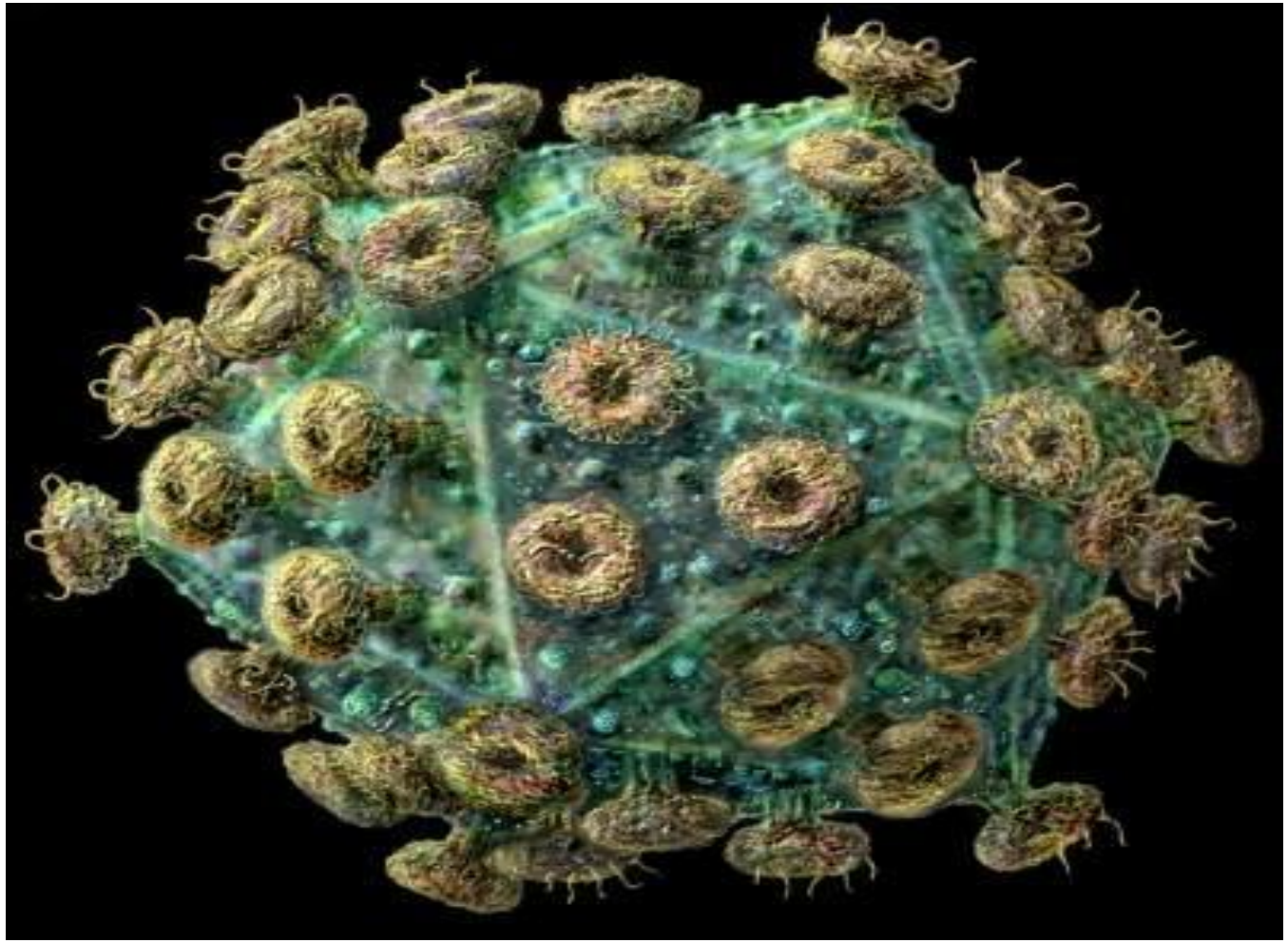
- Sever & often fatal chronic disease
- HIV (Human immunodeficiency Virus)
- CD4+T lymphocyte
- Opportunistic infection & malignant tumor
- Sexual contact &injection transmission

# ETIOLOGY

- **Causative organism: HIV**
  - **HIV-1 & HIV-2**
  - **Single-strand RNA, retroviridae.**
  - **3 structural gene**
    - **env gene: envelope Pro.-- gp120, gp41**
    - **gag gene: core pro. --P24 & medium P**
    - **polymerase gene: polymerase, retrotranscriptase**




Human Immunodeficiency Virus – Structure



# ETIOLOGY

- **Isolation:**
- **blood cell, plasma, lymph nodes, semen,**
- **saliva, tears, breast milk.**
- **Target cell:**
- **CD4+T, M, B cell,Nerve cell**
-

# EPIDEMIOLOGY

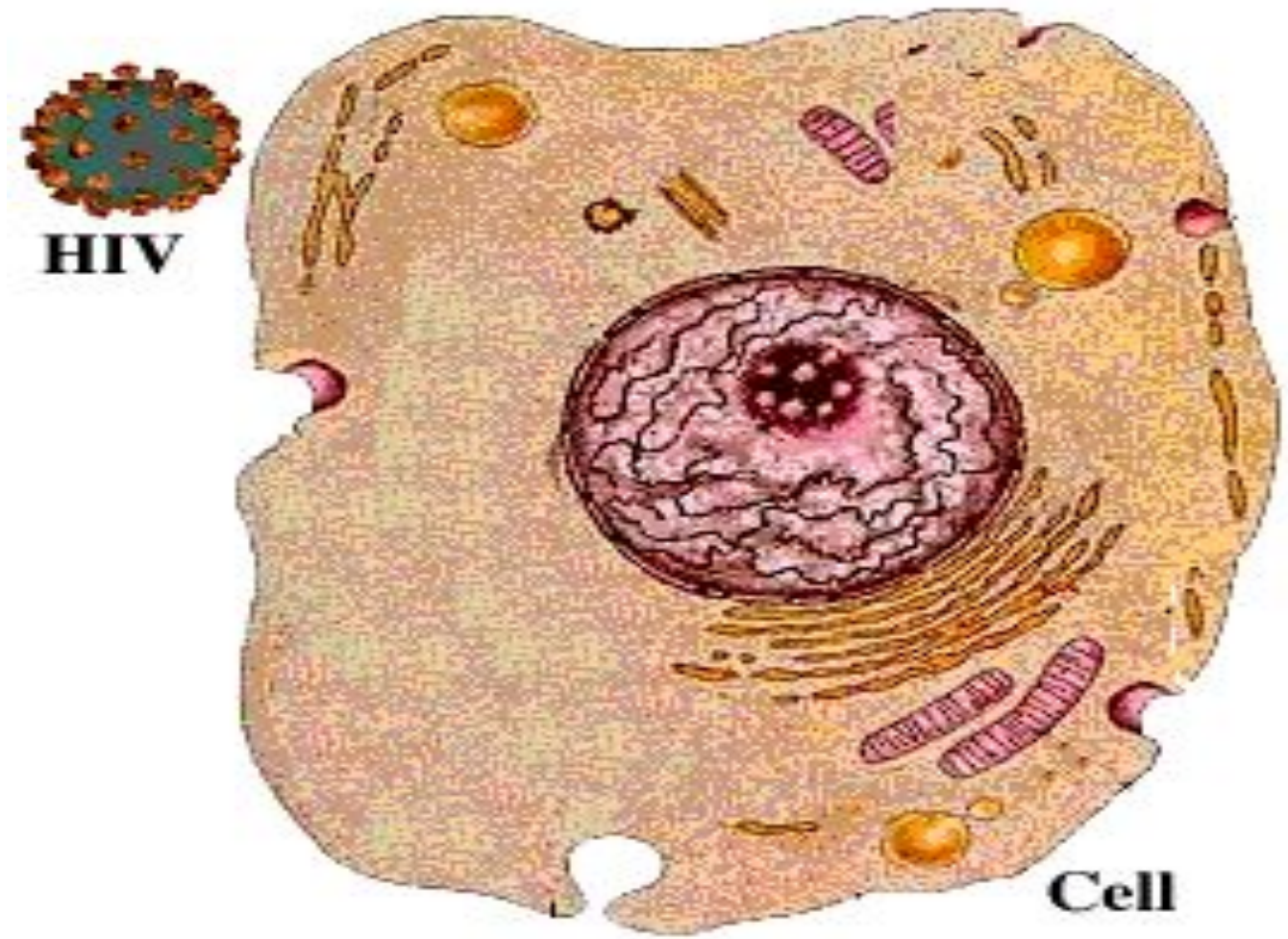
- **Source of infection:**
  - **patients**
  - **asymptomatic carriers**
- **Route of transmission:**
  - **sexual contact transmission:**
    - **homosexual or bisexual: Western world**
    - **heterosexual: Africa**
  - **injection transmission:**
    - **intravenous drug abusers**
    - **blood or its components transfusion**

# EPIDEMIOLOGY

- **Route of transmission:**
  - vertical spread:
    - **placenta: from mother to infant**
    - **breast milk**
  - other route:
    - **organ transplants, artificial insemination**
    - **needle-stick, hospital staff**

# EPIDEMIOLOGY

- **Susceptibility of population:**
  - at-risk groups
    - **SEXUALLY active : homosexual or bisexual**
    - **Intravenous drug abusers**
    - **Blood transfusion**
    - **> 40 yrs. male**




动态演示HIV病毒的感染过程

- Inside the body:
- There is no cure or vaccine for HIV. Once someone is infected, the virus integrates into host cells.
- Antiretroviral therapy (ART) suppresses viral replication, reducing HIV in the blood to undetectable levels. This prevents disease progression and transmission but does not eradicate the virus.
- Outside the body (on surfaces):
- HIV is an enveloped virus, meaning its lipid membrane makes it vulnerable to environmental stress.
- It does not survive long outside the body and is easily destroyed

# PREVENTION

- By :**Control source of infection**
- **Isolation**
- **Sterilization:**
  - Bleach (sodium hypochlorite)
  - Alcohol-based disinfectants (≥70% ethanol or isopropanol)
  - Hydrogen peroxide
  - Heat and drying
  - EPA-registered disinfectants effective against HIV (listed in EPA's "List S")
- **Cut the route of transmission**

- **Healthcare and prevention:**
- **Standard infection control measures:**
- **(gloves, sterilization, disinfectants) are highly effective in preventing transmission.**
- **ANTIRETROVIRALTX. combined with safe practices (condoms, sterile needles, blood screening) has dramatically reduced HIV spread.**

# PATHOGENESIS

**HIV is a cytotoxic virus**

**HIV infects CD4+ T lymphocytes, leading to progressive immune suppression.**

- **Normal range: 500–1,500 cells/μL in healthy adults.**
- **Decline: As HIV replicates, CD4 counts drop, weakening immune defense.**

Normal: 500–1,500 cells/μL

- Early HIV: gradual decline, often asymptomatic
- Moderate immunosuppression (200–499): recurrent bacterial infections, oral candidiasis, herpes zoster
- Severe immunosuppression (<200): AIDS-defining illnesses (Pneumocystis pneumonia, toxoplasmosis, cryptococcosis)
- Profound (<50): CMV retinitis, Mycobacterium avium complex

# CLINICAL MANIFESTATION

- **Incubation period: 2 to 10 yrs.**
- **First period-Illness of infection**
  - **Symptoms:** **fever, headache, anorexia, nausea, enlargement of lymph nodes**
  - **HIV +, P24 Ag +, CD4/CD8 inverted ratio**
  - **Last 2 weeks**

# CLINICAL MANIFESTATION

- **Second period-Asymptomatic contact**
  - **Initial HIV inf. or after illness of inf.**
  - **No symptoms**
  - **HIV +, Anti- core Ag +, anti-envelope Ag +**
  - **Last 2 to 10 yrs.**

# CLINICAL MANIFESTATION

- **Third period-PGL**
- **(Persistent Generalized Lympho-adenopathy)**
  - **Enlargement of lymph nodes outside the inguinal area**
  - **more than 2 areas**
  - **more that 3 months**

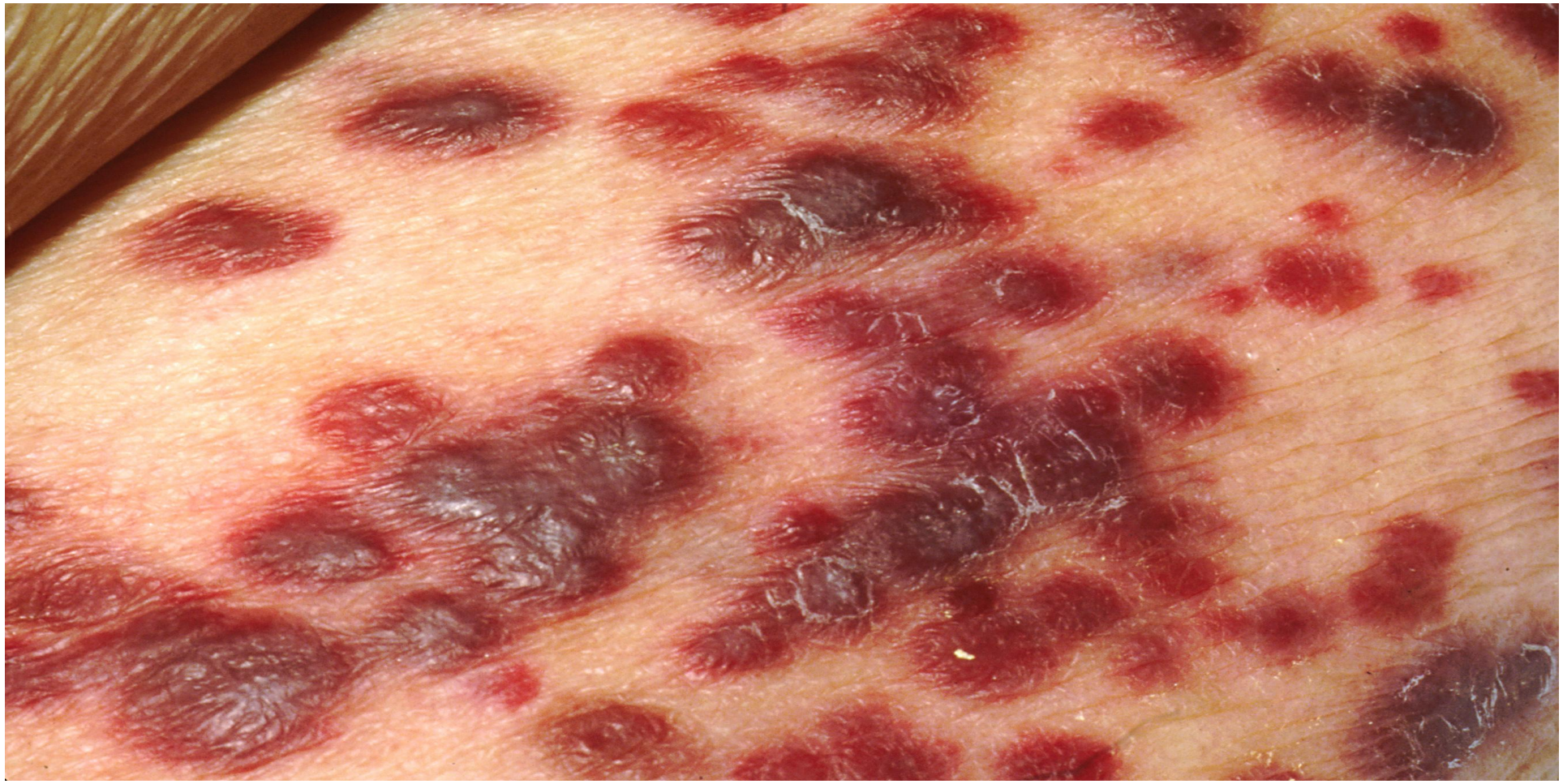
# CLINICAL MANIFESTATION

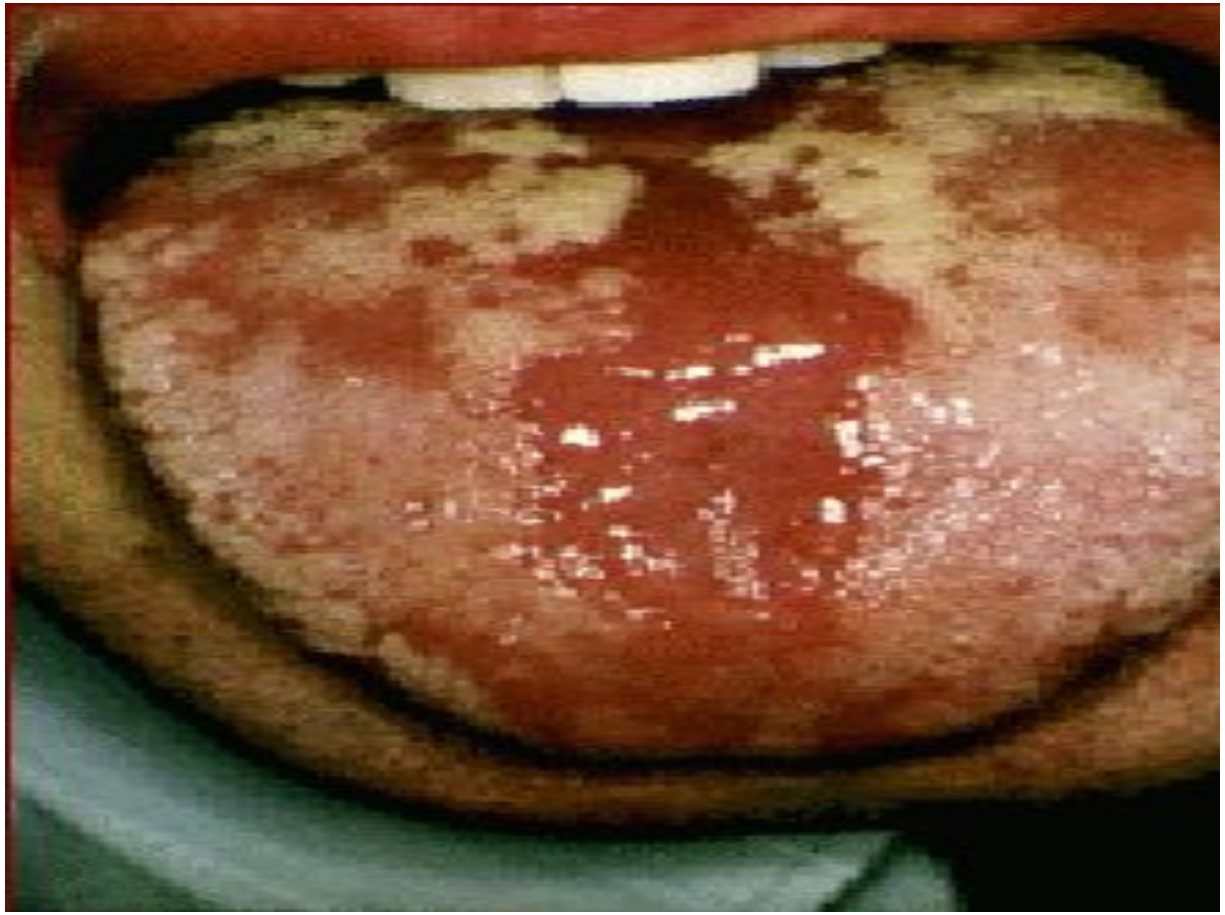
- **Fourth period-Manifest AIDS**
  - **ARC(AIDS-related complex):** fever, loss of weight, anorexia, diarrhea
  - **nervous system symptoms:** headache, convulsion, paralysis, progress dementia
  - **Rare opportunistic infection**
  - **Unusual malignant tumors**
  - **Pneumonia**

# CLINICAL MANIFESTATION

- **Common manifestation of AIDS**
  - **Lung infection: P. Carinii pneumonia**
  - **Gastrointestinal infection: candidiasis of mouth or oesophagus**
  - **Central nervous system infection:**
  - **Ski infection: Kaposi's sarcoma - red or violet macules or papules**

# KAPOSI'S SARCOMA





candidiasis of mouth

# LABORATORY FINDINGS

- **Blood picture:** WBC and RBC decrease
- **Immunologic test:** CD4+T decrease, CD4/CD8 <1
- **Serological test:** anti-HIV pos., Ag
- (gp120, p24), anti-gp120, anti-p24.
- **HIV isolation and PCR.**

# CLINICAL DIAGNOSIS

- **High risk population: >2 pos**
  - **Loss of weight >10%**
  - **Chronic cough or diarrhea > 1 mon**
  - **Intermittent or persistent fever >1 mon**
  - **Herpes infection**
  - **Candidias infection in mouth**

# LABORATORY DIAGNOSIS

- Antibody tests (ELISA, rapid tests) – detect HIV antibodies.
- Antigen-antibody combo tests – detect p24 antigen + antibodies (earlier detection).
- Nucleic Acid Tests (NATs): Detect HIV RNA (viral load).
- CD4+ T cell count: Measures immune suppression.
- Viral load monitoring: Guides treatment response.
- Other labs: CBC (anemia, leukopenia), liver/renal function tests for ART monitoring.

# TREATMENT

- There is **no cure** for AIDS at this time.
- However, a variety of treatments are available that can help keep symptoms at bay and **improve the quality of life** of those who have already developed symptoms.

# TREATMENT

- **Anti-virus**
  - **AZT(antiretrovirals ): CD4<0.5 109/L**
  - **AZT plu IFN(Kaposi's sarcoma)**
  - **Pentamidine( pneumocystis carinii pneumnia)**
- **Immune therapy**
- **complication therapy**

**Which cell is the target cell of HIV?**

**a.CD8+ cells**

**b.Mononuclear cells**

**c.CTL**

**e.NK cells**

**f.CD4+ cells**

**How many years may the asymptomatic infecfion last After the infection of HIV ?**

**a.1year**

**b.20years**

**c.2~10years**

**d.2~10years or more**

**e.1~20years**

**The most main route of transmission for AIDS is:**

**A. Sexual contact**

**B. Receiving blood and blood products**

**C. Abuser of intravenous drug**

**D. Receiving organs or tissues**

**E. Eating uncooked food**

**Which drug is used for the treatment of pneumocystis carinii pneumnia.**

**A. pentamidine**

**B. Bleomycin**

**C. spiromycin**

**D. clindamycin**

**E. Gancyclovir**