

► LEARNING OBJECTIVES

- ❑ **Discuss stages of AIDS and dominant clinical features**
- ❑ **Enumerate AIDS defining opportunistic infections and malignancies**
- ❑ **Discuss the role of laboratory in diagnosing HIV infection**

► STAGES OF HIV INFECTION

- **INITIAL INFECTION**
 - Mucosal infection
 - Macrophages ingest HIV
 - Blood-Viremia

- Lymph nodes-localize dendritic cells
- CD4+ infected moving through Lymph nodes

▶ STAGES OF HIV INFECTION

- **LATENT PERIOD**

- Viremia reduced
- Cell mediated immune response CD8+
- Humoral response appear
- Months to years
- HIV proviruses transcriptionally silent (90%)
- CD4+ count declines only slowly

▶ STAGES OF HIV INFECTION

- **PROGRESSION TO AIDS**

- Active replication of HIV
- Mutant strains produced

- T cell precursors in marrow infected
- Production of CD4+ ↓
- Rapid decline in CD4+
- Rapid collapse of Immune system
 - ▶ WHO Clinical Staging of HIV/AIDS for Adults and Adolescents
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 - ▶ **OPPORTUNISTIC INFECTIONS IN HIV INFECTION**

CNS Infections

- Cryptococcus neoformans* meningitis
- Toxoplasmosis
- TB meningitis
- JC virus Progressive Multifocal Leukoencephalopathy

Eye Infection:

- CMV retinitis

Respiratory tract infections:

- Pneumocystis jiroveci* pneumonia
- Strep pneumoniae* pneumonia recurrent
- Reactivation of TB
- Pulmonary Nocardiasis

► MCQ

A 29-year-old man who was in perfect health before, reports with three days history of fever, altered mental status and vomiting. He has neck rigidity and CSF exam reveals *Cryptococcus neoformans* meningitis. What further investigation would you recommend in this patient?

- CT scan head
- CSF culture
- Blood glucose levels
- HIV antibodies

► OPPORTUNISTIC INFECTIONS IN HIV INFECTION

GI infections:

- Oral thrush
- Esophageal candidiasis
- CMV colitis
- Strongyloides stercoralis* hyperinfection
- Mycobacterium avium intracellulare* disseminated infection

Skin Infections

- ❑ Kaposi sarcoma (HHV-8)
- ❑ Herpes zoster
- ❑ Subcutaneous nodules (*Cryptococcus neoformans*)
- ❑ Anogenital warts (HPV)

► MCQ

An HIV positive patient reports with three days history of pain in throat and difficulty in deglutition. His upper GI endoscopy revealed white curd like patches in whole of esophagus. What is the most likely pathogen responsible for this illness?

- *Cryptococcus neoformans*
- *Candida albicans*
- *Strongyloides stercoralis*
- *Pneumocystis carinii*

► LAB DIAGNOSIS

Serological Assays

- Anti HIV antibodies by ELISA

- Very sensitive test
- Detects antibodies against gp 120, gp41
- Window period of 25 days
- Any positive test is retested by ELISA
- Two consecutive positive ELISA tests needs confirmation by specific tests

▶ **LAB DIAGNOSIS**

- Western Blot assay

- Highly specific test for HIV
- Viral antigens e.g. gp120, gp41, p24 are separately imprinted on paper strip
- Serum mixed
- Antibodies combine & form visible line
- Can identify HIV 1 or 2

- Immunochromatographic tests

- Rapid tests
- Quite sensitive but false positive

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▶ **LAB DIAGNOSIS**

Nucleic acid amplification tests: (PCR)

- Most sensitive test
- Positive in early viremia also
- Can quantify viral copies /ml
- Genotype testing can be done
- Both parameters imp in disease staging & prognosis

Virus isolation & culture

- Laborious & time consuming
- Only in reference labs

▶ **MCQ**

An HIV positive woman gave birth to a baby boy. She is concerned that her baby might not have been infected by the HIV virus. Which of the following tests would

you carry out to diagnose HIV infection in this newborn?

- ELISA test for anti-HIV antibodies
- Western blot test
- HIV RNA analysis by PCR
- Rapid immunochromatographic test for HIV