Infectious Mini-OSCE

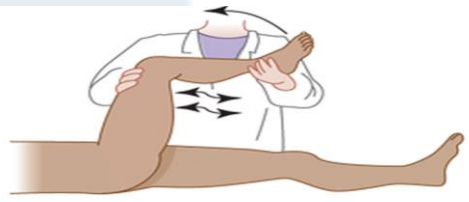
QMA Team

Meningitis

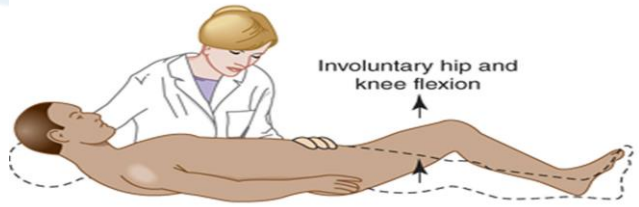
Meningitis

- **General**: **Inflammatory disease of leptomeninges**. Infectious spread via **hematogenous**, or **contiguous spread** (sinusitis, otitis media, trauma, surgery), or retrograde transport up nerve.
- **Etiology**: **Adults**: **S. pneumonia**, N. meningitides, H. influenza …. **Listeria** in elderly.
- **Clinical**:

1. **Fever, nuchal rigidity, headache**.
2. Lethargy, but intact sensorium (vs encephalitis).
3. Others: Seziures, focal deficits, maculopapular rash.
4. **Kernigs** sign: inability to extend knees with patient supine and hip flexed.
5. **Brudziniski** sign: Leg flexion when passive flexion of neck.

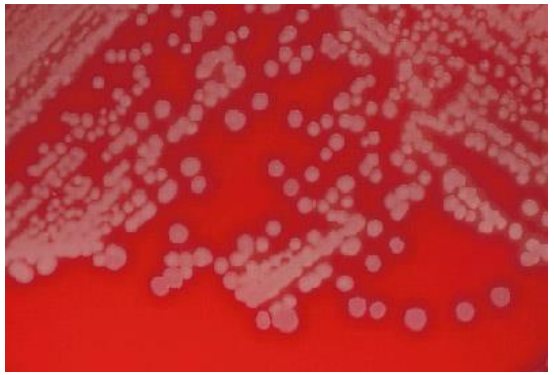


A Kernig sign



B Brudzinski sign

Meningitis



- **Diagnosis**: **Lumbar puncture** (CSF findings are diagnostic). **Blood cultures** should also be obtained.
- Lumber puncture ???
- **When CT is needed before CT**?

1. Previously **performed to rule out ↑ICP** in fear of herniation.
2. So if there is a **history of mass lesion or stroke**, **new onset of seizure**, **papilledema**, **focal neurological deficit**, **abnormal consciousness**, or **immunocompromised** (**HIV**).

Subtype	WBC	Diff	Protein	Gluc	Gram Stain
Normal	< 5	--	15-60	50-75 (66% serum)	--
Bacterial	> 1000	> 80% PMN	↑↑	↓	(+)
Viral (Aseptic)	5-500	> 50% L	↑	↔	--
Fungal	20-2000	> 50% L	↑	↔	--
TB	20-2000	> 80% L	↑	↓	(+) in some

General Principles:

- **Empiric antibiotics:** start **immediately after LP** is performed, **Adjust** once culture/ sensitivity are resulted.
- **Steroids**: Indicated in (**HiB**, controversial w/ S. pneumonia), thus will decrease complications.
- **Contact PPX:** For meningiococcus (**Rifampin or ceftriaxone**).
- **Adults: Vancomycin + ceftriaxone**, Add **Ampicillin** if **> 50 y/o**, Dexamethasone if (pneumococcus).
- **Aseptic: Observe**, consider **Acyclovir if HSV** suspected.

Complications

- **Hearing loss.**
- **Seizers.**
- **Intellectual disability.**
- **Hydrocephalus.**
- **Brain abscess.**

Q: 24 YO female, presented with headache, fever, & deterioration in level of consciousness, brain CT was free, the L.P s (values shows high WBS, LOW glucose).

Q1: what is the Dx?

Acute meningitis.

Q2: give 2 lines of treatment.

IV antibiotics , Anti-pyretics .

Q3: give one major complication.

brain abscess, seizure, encephalitis .

Q1: Dx ?

Acute bacterial meningitis

Q2 : mention 2 causative oreganisms ?

- St.pneumoni
- H.infiluenza

- CSF analysis :

- WBC :2000
- PMN 90%
- protein: 3.2 g
- glucose: 1.5

< 0.45 gm

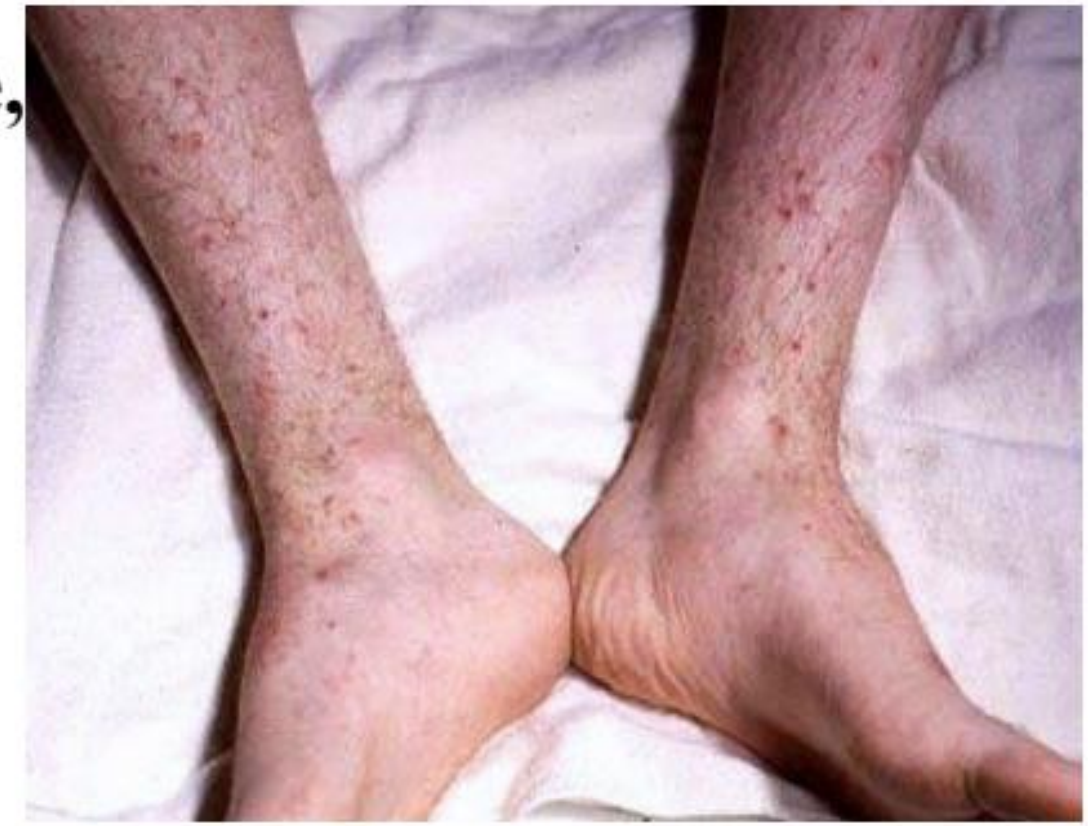
Q3.A 30 year old patient with high fever, headache, and Hypotension . His legs shown below.

1.What is the diagnosis?

Meningococcemia

2.What is the causative organism ?

Neisseria meningitidis



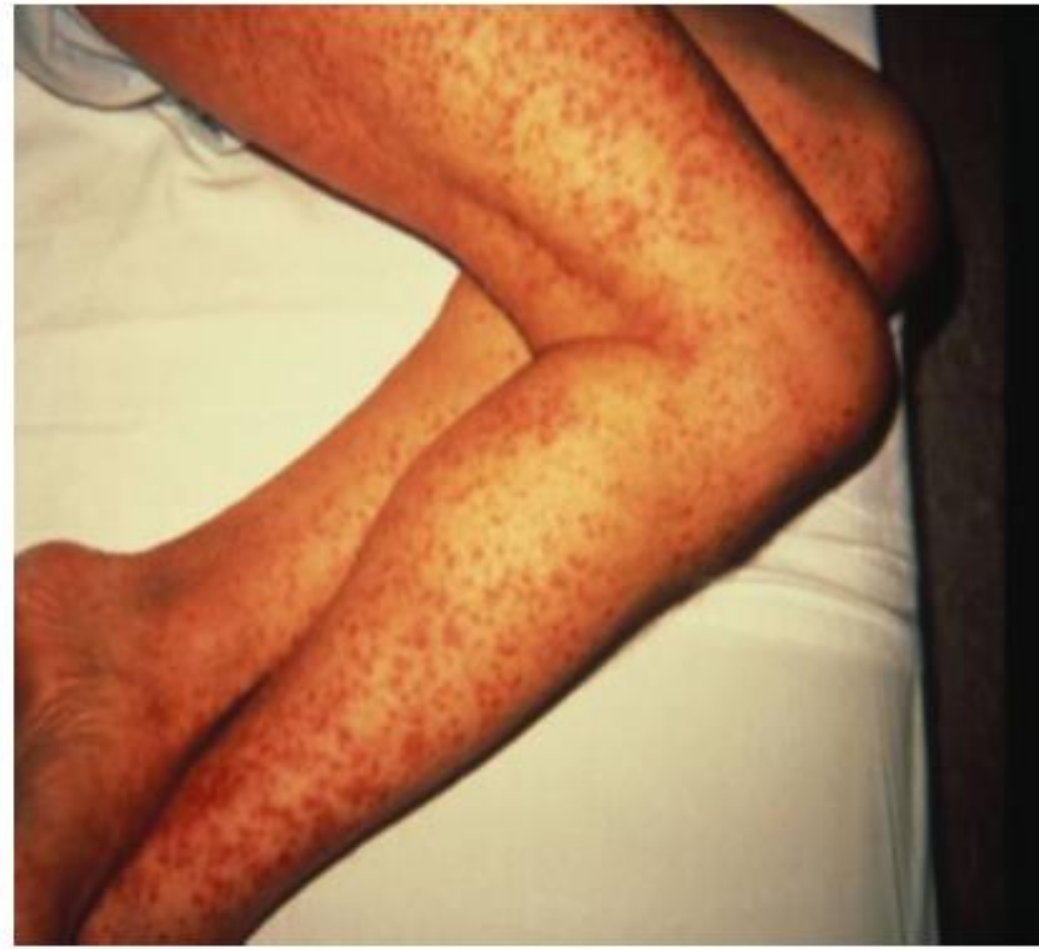
which are not palpable neither blanching on pressure

Q1 : What is your diagnosis?

Meningiococcemic Rash

Q2 : What is the appropriate investigation?

LP –CSf analysis and culture ?



Q12. A patient comes with headache , fever and neck stiffness , on CSF results, these were the results

A. what is the dx

B. give one complication

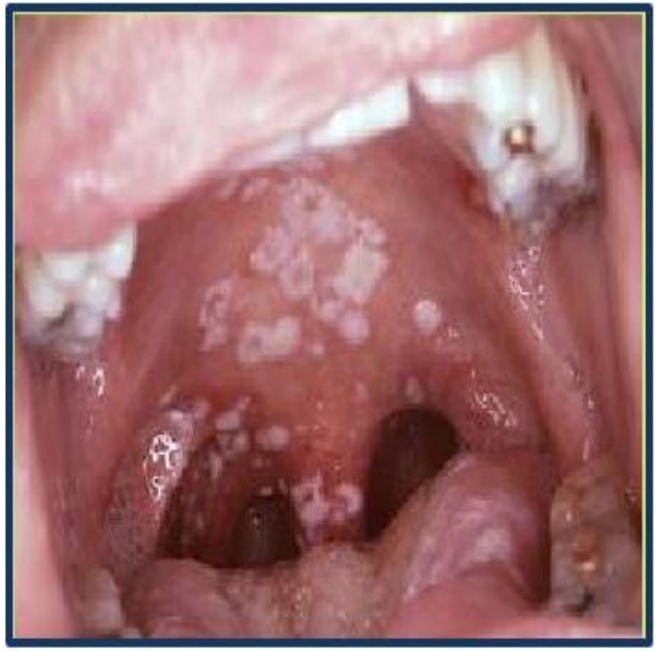
cell count	<2000 cells/mcL predominately lymphocytes
glucose	normal
protein	<150 mg/dL

A. Viral meningitis

B. Raise of ICP→ herniation , seizures ,,etc.

Q: This patient is receiving inhaled steroids, what's your diagnosis?

Oral Candidiasis



Q: Who are the patients mostly affected by this ?

Immunocompromizes

Patients that have uncontrolled DM

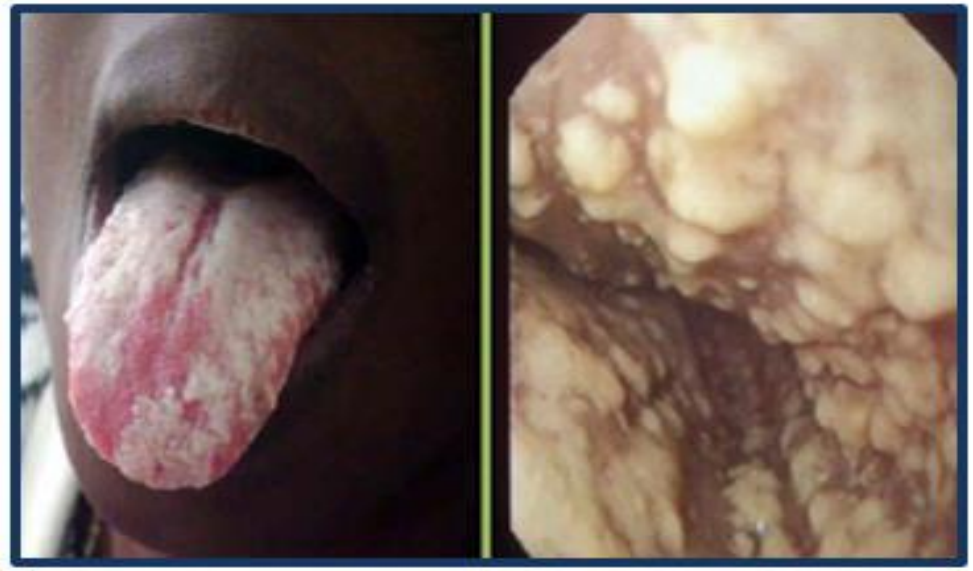
Patients have HIV infection

How to treat such case ?

Echinocandin is the first line therapy in all patients

Q: 34 YO pt with HIV presented with these lesions, what is your Dx?

Candidiasis.



Herpes Zoster

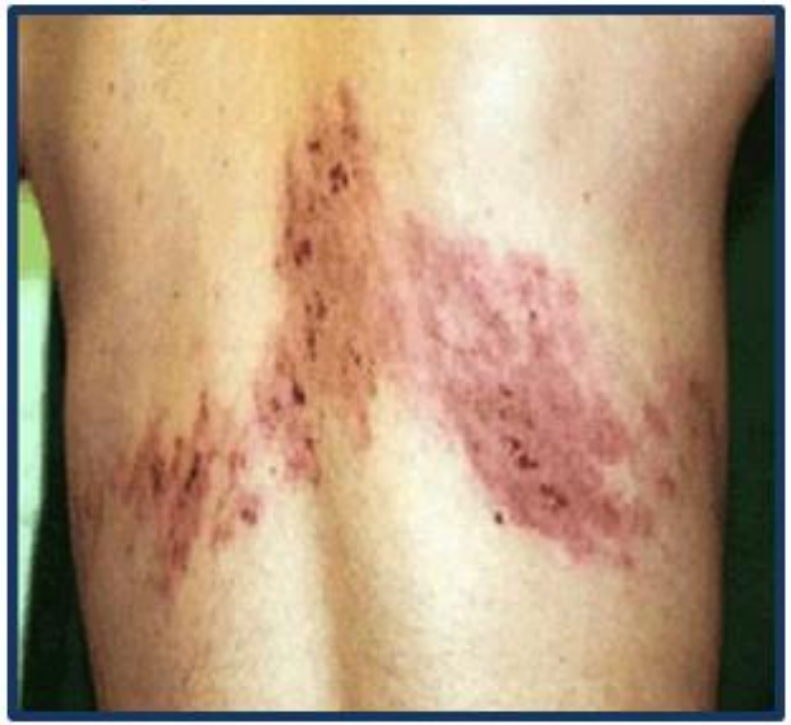
- **Reactivation of VZV** (must have had virus previously), usually seen at **ages >50 y/o**.
- **Severe pain (neuritis)** and **vesicular rash in dermatomal distribution**.
- **Complications**:

1. **Post herpetic neuralgia**.
2. **VZV ophthalmicus or oticus**, which can lead to **blindness or hearing loss**.

- **Treatment**: **Acyclovir or Valcyclovir** (if within 72 hours of symptoms or new lesions still appearing).
- Only **contagious for those without VZV in past** or **immunocompromised**.
- Recurrent disease is more common in immunocompromised.

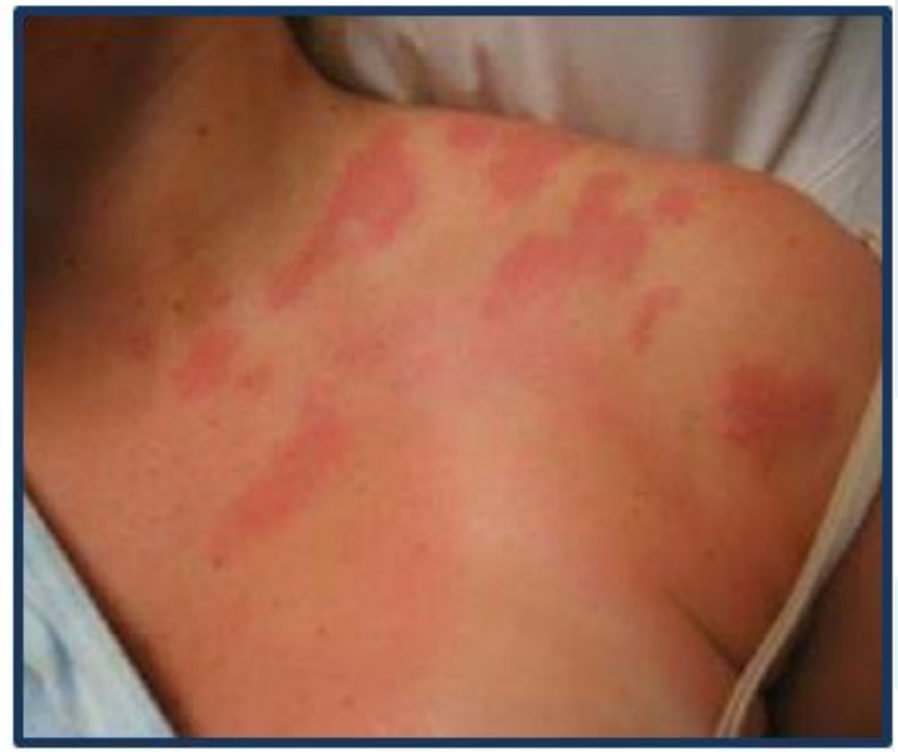
Q: what is the diagnosis?

Herpes zoster.



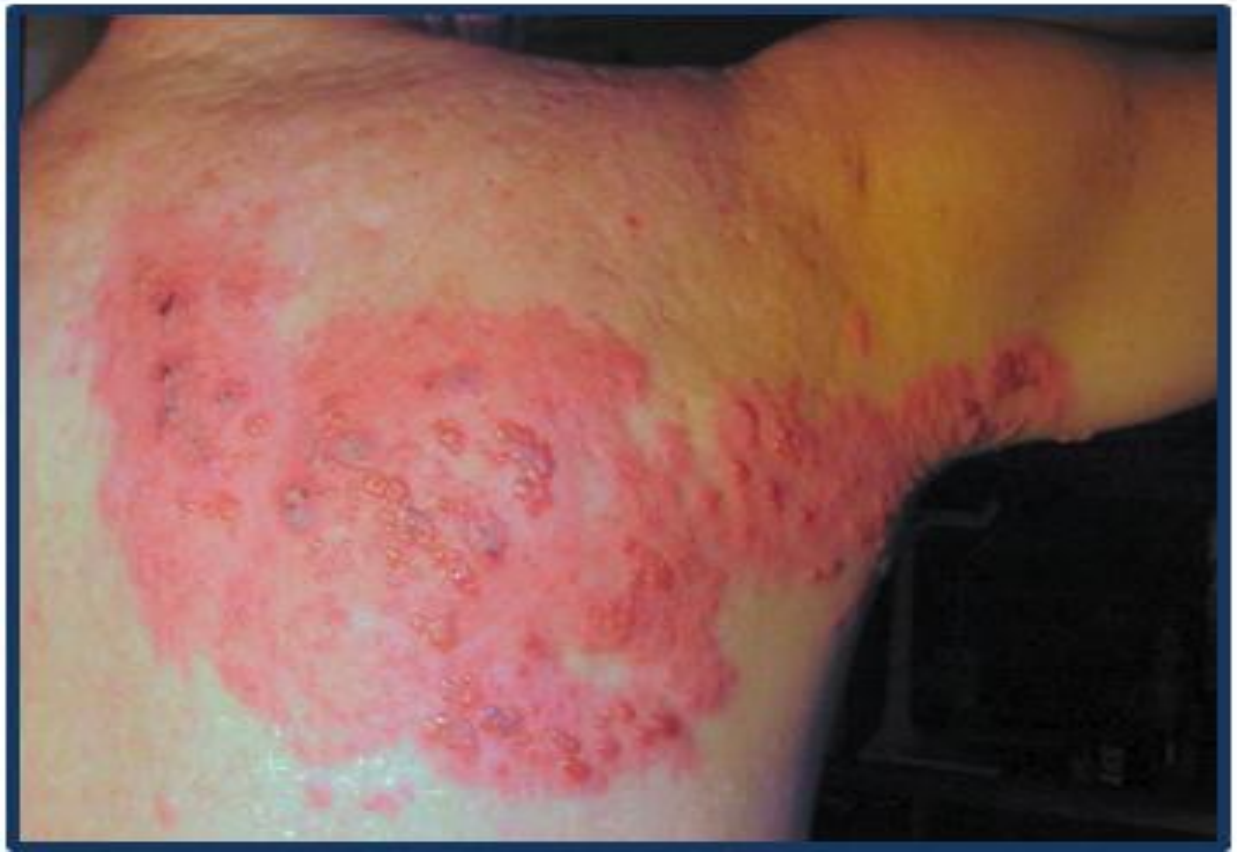
Q: a pt with skin lesions on a Dermatological distribution. What is your Dx?

Herpes zoster.



Q: What is your spot diagnosis ?

Herpes zoster



HIV (AIDS)

Definitions and Causes

- Infection with the human immunodeficiency virus (HIV) leads to a complex disease which ultimately results in chronic immunodeficiency.
- The virus infects macrophages and other CD4+ cells, leading to the destruction of CD4 T cells and impairing the cellular immune defense.
- There are three major stages: acute infection, clinical latency, and acquired immunodeficiency syndrome (AIDS).

- Routes of transmission
  - Sexual (~ 80% of infections worldwide)
  - Parenteral transmission
  - Infectious blood on mucous membranes
  - Vertical transmission: from mother to child (during birth or breastfeeding)

Clinical features

- Acute HIV infection (1-2 weeks)
  - Fever, fatigue
  - Myalgia and arthralgia
  - Headache
  - Generalized nontender lymphadenopathy
  - Generalized rash
  - Gastrointestinal symptoms
  - Sore throat

- Clinical latency (years)
  - Patients may still be asymptomatic.
  - Non-AIDS-defining conditions.
  - Localized opportunistic infections (oral candidiasis, vaginal infections)
  - Chronic diarrhea.
  - Skin manifestations (molluscum contagiosum, warts, Kaposi sarcoma [malignancy, in AIDS])

AIDS defining illness

- The CDC defines AIDS as the development of an AIDS-defining condition or a CD4 cell count of <200 cells/µL in HIV-infected patients.
- Pneumocystis jirovecii pneumonia (CD<200): treatment and prophylaxis with trimethoprim/sulfamethoxazole (TMP/SMX).
- Primary CNS lymphoma (CD4<100): Contrast CT: solitary ring-enhancing lesion
- Cerebral toxoplasmosis (CD<100): Contrast CT: multiple ring-enhancing lesions
- Cryptococcal meningitis (CD4<100)
- Cytomegalovirus (CMV) retinitis (CD4<50)
- Mycobacterium avium complex (MAC) infection (CD4<50): treatment and prophylaxis with Macrolide (clarithromycin or azithromycin) plus ethambutol.

Diagnosis

- Screening tests
  - Combination antigen/antibody tests: detect both HIV antigen and anti-HIV antibodies → a negative result essentially rules out HIV infection (almost 100% sensitivity) (Screening test of choice)
  - ELISA (Antibody-only tests) (2nd choice)
- Confirmatory tests
  - HIV-1/HIV-2 antibody differentiation immunoassay: can detect both HIV-1 and HIV-2 in 20 minutes. (Confirmatory test of choice)
  - Western blot (2nd choice)

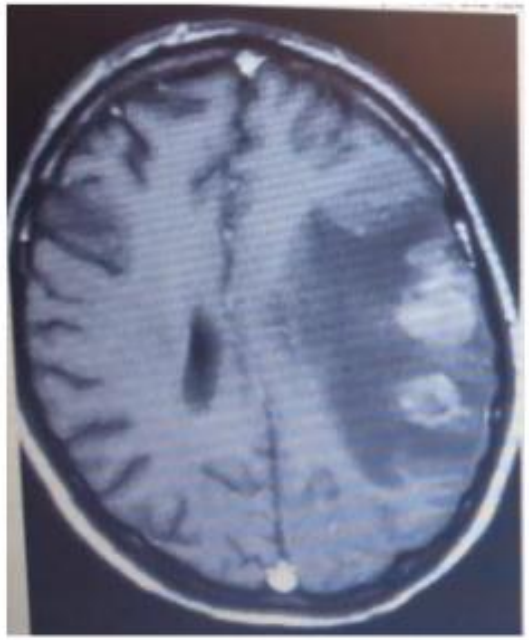
Management

Highly active antiretroviral therapy (2 of the three)

- Antiretroviral HIV therapy (HAART)
  - Backbone: Nucleoside reverse transcriptase inhibitors (NRTI): e.g., zidovudine, lamivudine, emtricitabine
  - Other options that are less effective:
    - Non-nucleoside reverse-transcriptase inhibitors (NNRTI): e.g., nevirapine, efavirenz.
    - Protease inhibitors (PI): e.g., indinavir, ritonavir, atazanavir, lopinavir
    - Nucleotide analogs: e.g., tenofovir.
  - Most NRTIs end in "ine", protease inhibitors in "avir"
- HIV post-exposure prophylaxis
  - Initiate a three-drug regimen as soon as possible

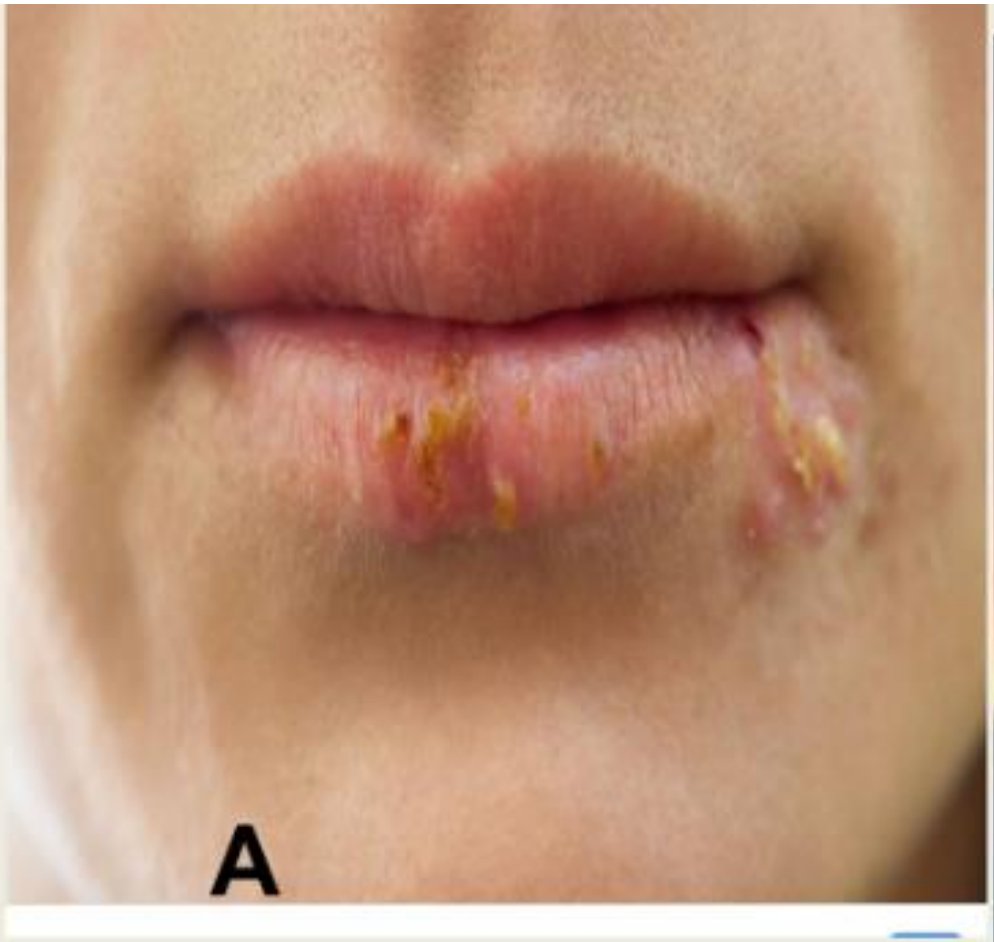
HIV (AIDS)

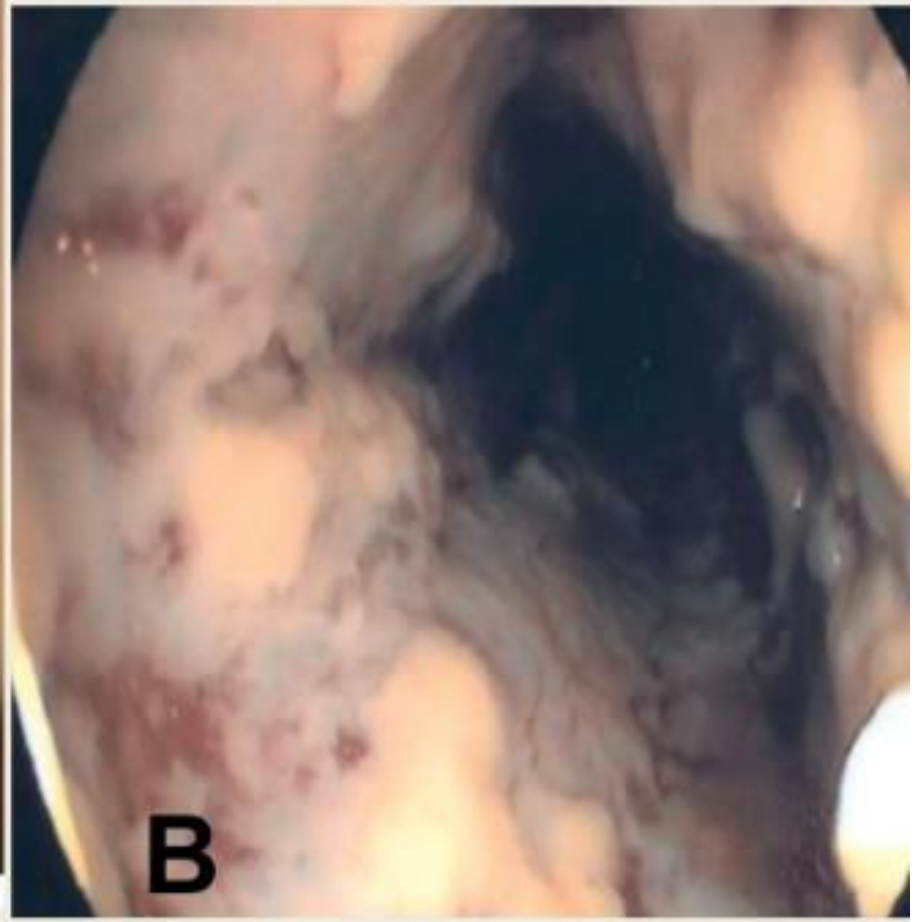
A 30-year old female patient with a long history of HIV infection presented with CNS manifestations and CD4 count of <100 cells/mm. The attached MRI image of the brain shows multiple ning enhancing lesions with surrounding edema Regarding the condition of this patient, the following statements are all correct, EXCEPT:



The following statements are all correct, EXCEPT:

A. The condition of this patient is primary cerebral lymphoma
B. The condition of this patient is one of the AIDS-defining diseases
C. This condition is due to infection with a protozoan parasite
D. The MRI image is characteristic for a specific diagnosis
E. The diagnosis of this condition is cerebral toxoplasmosis





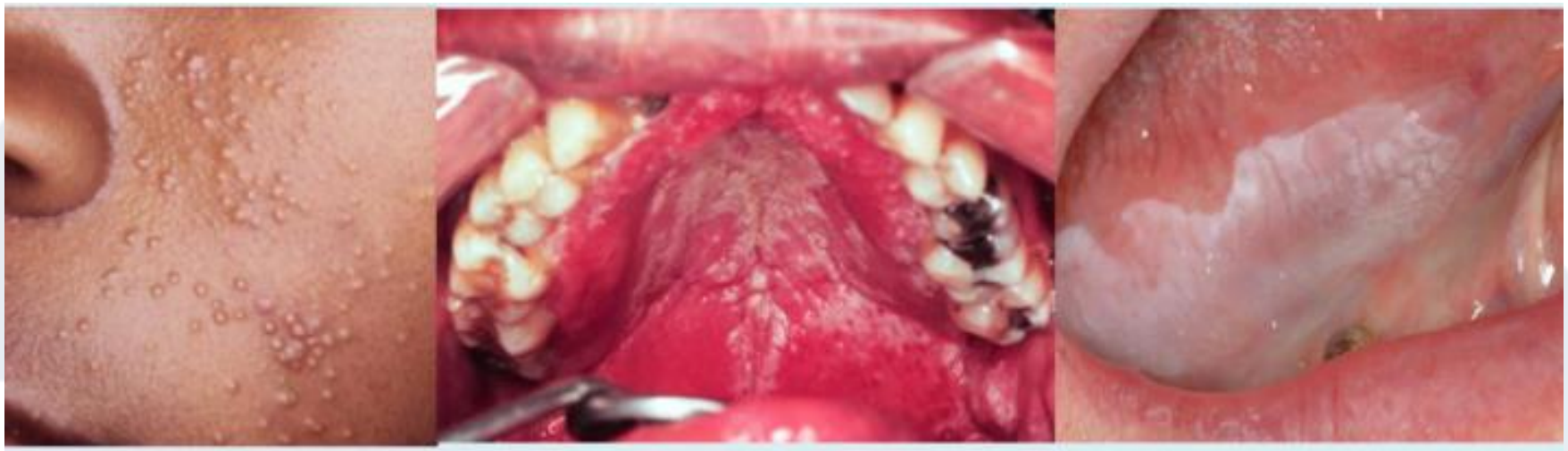
What is your diagnosis
What the organisim that cause each lesion in these pic
What is the # of CD4 cells ?

1- AIDS

2- A- Herpes simplex virus

B- candidia

3- below 200 cells per micro litter



1- Name the mucucutaneous manifestations above ?

*Molluscum contagiosum , oropharyngeal candidiasis , leukoplakia

2- Name the disease ?

*AIDS or HIV infection

3- Mention one of the conformation lab investigations ?

*Anti-HIV AB

Others

Station 2

Cannulas numbered 1,2,3

Q1 : type the gauge of each cannula ?

Q2 : which of these cannulas you use for a pt . Come to ER with trauma & hemorrhage?

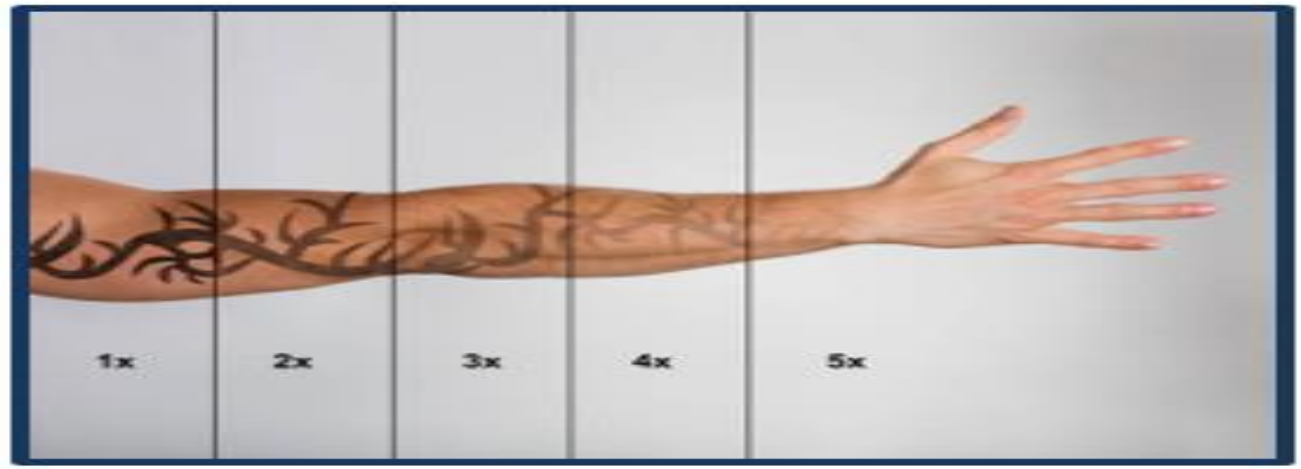
CANNULA TYPES

Size	Colour Coding	Flow Rate	Uses
14G	Orange	240ml/min	Trauma Patients. Rapid, Large-volume replacement
16G	Grey	180ml/min	Trauma Patients, Major Surgery, Intra partum/Post partum, GI bleeds, Multiple blood transfers, High volume of fluids
17 G	White	125ml/min	Newly added
18G	Green	90ml/min	Blood products, delivery of irritant medications, major surgery, contrast study
20G	Pink	60ml/min	General use,IV maintenance, IV antibiotics, IV analgesia
22G	Blue	36ml/min	Small or Fragile veins, Cytotoxic therapy
24G	Yellow	20ml/min	For paediatric usage
26G	Violet	13ml/min	Newly added

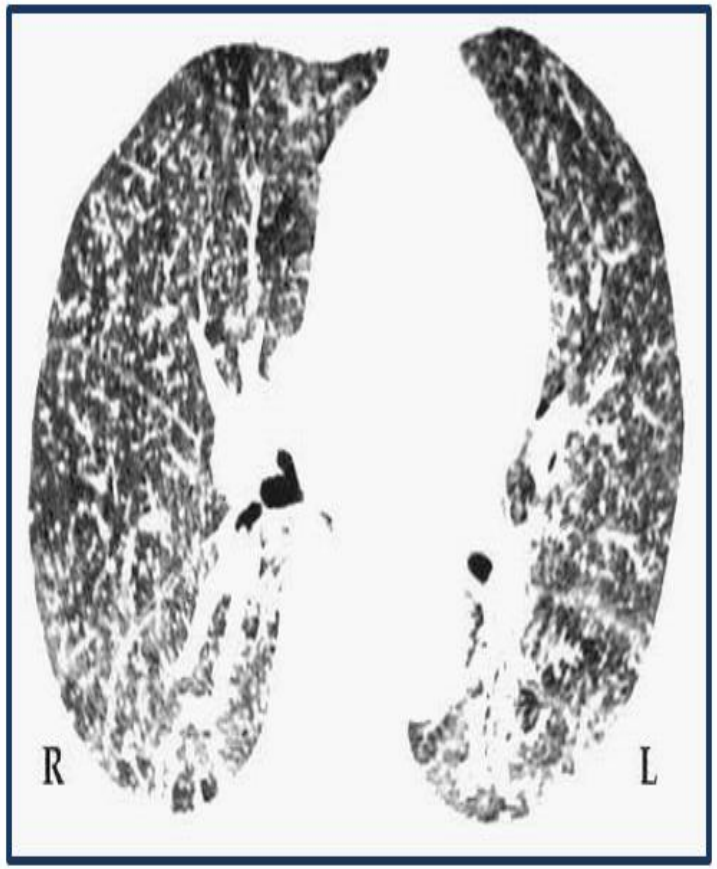
Q: Mention complications for this procedure

Complication of Tattoo

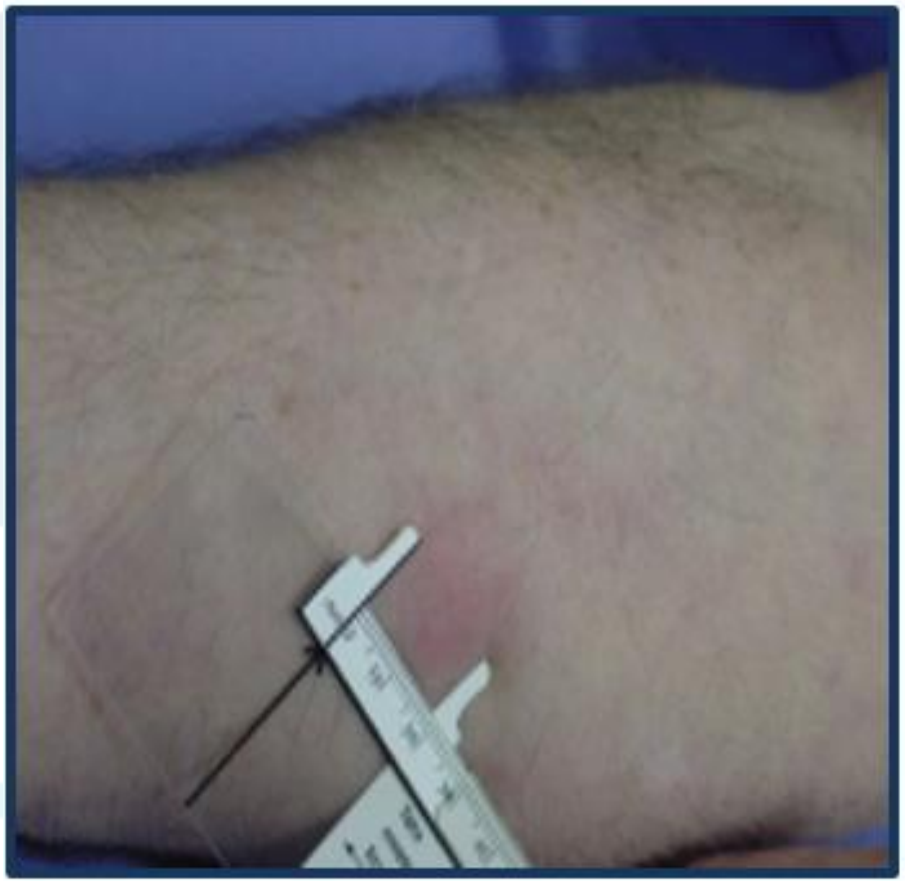
- Allergic reactions
- Skin infections
- Bloodborne diseases like hepatitis B and c and MRSA



CT scan Miliary TB



Mantoux Test

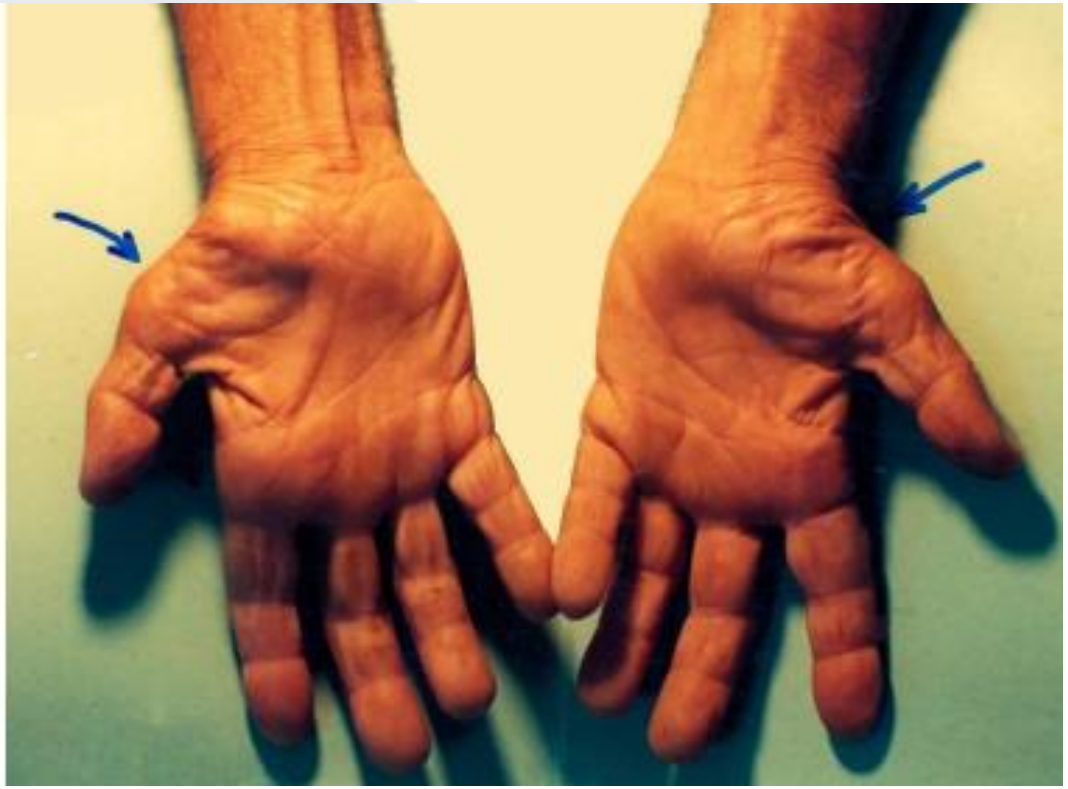


A.Describe the finding.

Thenar muscles wasting

B.What is the cause

Median nerve injury



Q5.What's your diagnosis?

Left facial palsy

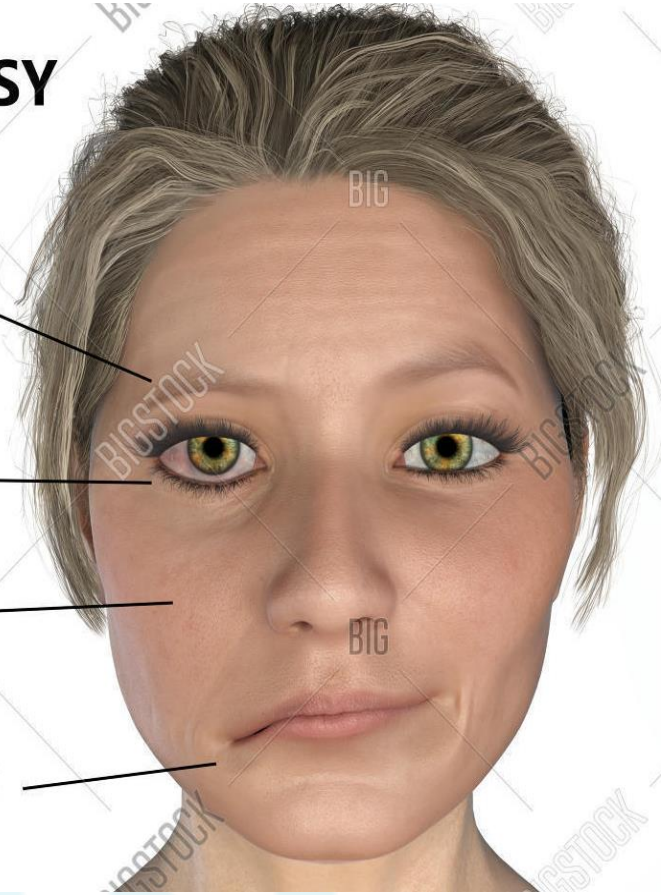
FACIAL NERVE PALSY

Inability to wrinkle brow

Drooping eyelid;
inability to close eye

Inability to puff cheek;
asymmetrical smile

Drooping corner of mouth;
dry mouth



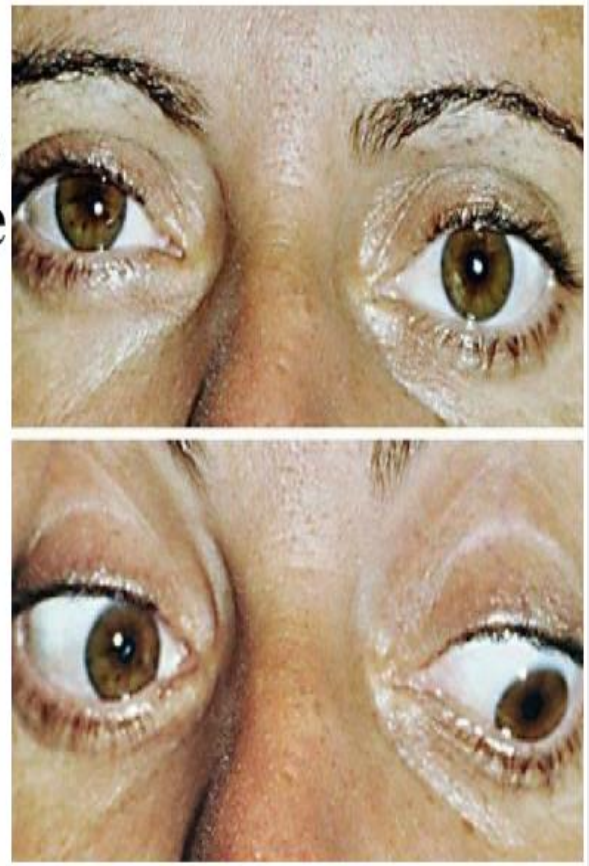
Q4.Pt complaints of double vision when going down the stairs

A.What is the sign?

Head tilting

B.What is the diagnosis?

4th cranial nerve palsy



Cranial nerve palsy	Exam findings – evidence of incomitance		
	Direction of gaze ←	Primary position	Direction of gaze →
Right 3rd nerve palsy	Smaller angle of horizontal squint	Right eye turns downwards and outwards	Unable to adduct right eye Larger angle of squint Double vision further apart
Right 4th nerve palsy	No obvious squint	Right eye turns upwards and outwards	Right eye elevates more as it moves medially Double vision further apart
Right 6th nerve palsy	Unable to adduct right eye Larger angle of squint Double vision further apart	Right eye turns medially	Able to adduct right eye No obvious squint

Thank You