HIV + Lung (Paediatrics)

↳ first case = 1982

↳ 30% have chronic d's on CXR

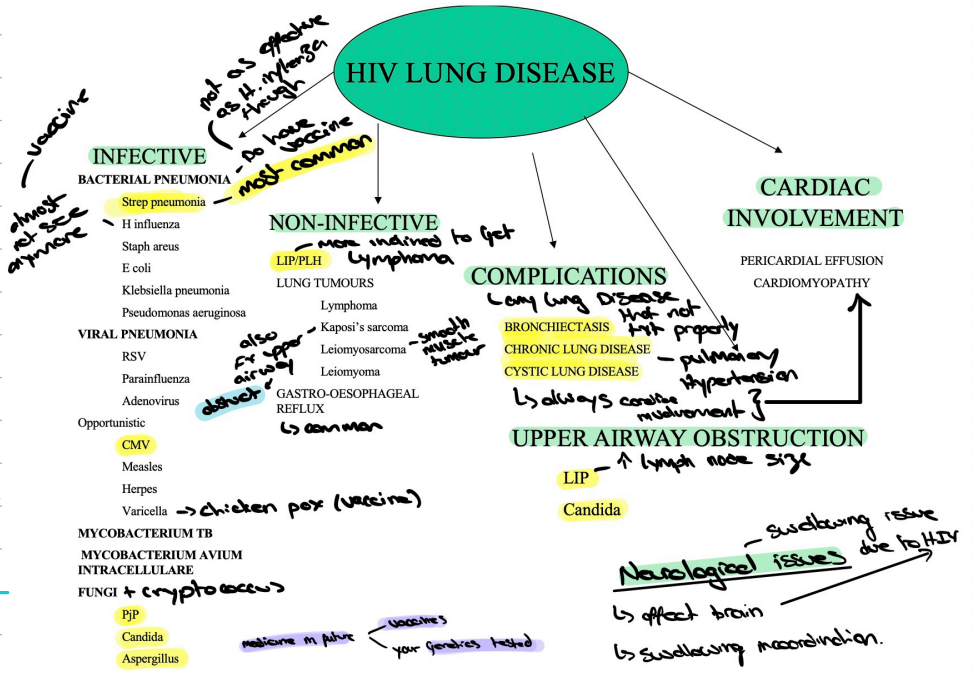
↳ Chest Disease = need more sophisticated Dx techniques

↳ pulmonary manifestations (commonest)

↳ common Bilateral Disorders:

- Bacterial pneumonia
- PCP
- CMV
- LIP

Infections with 1+ org. = common



Acute Resp Disease in HIV(+)

Bacterial pneumonia

PJP

Viral pneumonia — Influenza, RSV, Adenovirus

CMV

Fungal infections — candida (skin), cryptococcus (pneumonia)

Community Acquired Pneumonia (CAP)

- Typical pneumonias but ↑ freq + severity (S. pneumoniae / S. aureus)
- ↑ Abscess & empyema % complication

Vaccine = ↓ risk for invasive pneumococcal disease

→ Susceptible to recurrent & unresolving pneumonias

Organisms: (usually polymicrobial infections)

S. pneumonia → most common

Salmonella spp. (non-typhoidal) → more Northern Africa (Malaria prevalence) (Sub-Saharan)

H. influenza (b) → vaccine

Klebsiella spp.

S. aureus

↑ freq in Atypical pneumonias

- mycoplasma - MOTS - pseudomonas spp. - E. coli

Radiology: (2 patterns)

- Patchy air-space in bronchopneumonia
- Air-bronchograms in lobar pneumonia

Lobar pneumonia on CXR - gone after 4-6 weeks

Presentation:

- Similar to HIV(-) Child
- fever
- cough
- tachypnoea
- Hypoxia
- Chest retraction

Investigations

- CXR
- CRP (blood)
- white cell count
- Blood culture (if hospitalized)
- Sputum culture
- PCR *

Treatment (out-patient) — Don't use 3rd gen cephalosporin (↑ resistance)

Amoxycillin (30-80 mg/kg/day)

⊕

Co-amoxiclav

only if suspect: Penicillin Resistant org : S. aureus

S. pneumonia can have intermediate Resistance (↑ dose = still effective)

Erythromycin if Penicillin Allergic

Treatment (in-patient)

Penicillin + Gentamicin ± Cloxacillin

(Ampicillin) (drug of choice for S. pneumonia)

↳ Gram (-)

if sus S. aureus

↳ 1st Gen cephalosporin = cephazolin

not make cloxacillin anymore

- Not Respond to Ampicillin
- Empyema
- Lung Abscess
- pneumatocele

Do not Discontinue Co-trimoxazole prophylaxis when treating intercurrent bacterial infections!

Pneumocystis Jirovecchii pneumonia (PCP/PJP)

Most severe opportunistic infection in children with HIV/AIDS

→ NB PJP = fungus

S & S → similar to bacterial pneumonia

onset: Gradual - Days → weeks

Febrile + cough

Hallmark: Tachypnoea with Hypoxia ← cyanosis ← measure

Lung Auscultation: normal

↳ if alveolar involvement:

crepitations

Bronchial breathing

Investigations:

Sat O_2 < 90% in room air

CxR: Abnormal in 90%

: Diffuse Bilateral alveolar / interstitial infiltrate

→ called a "white out"

: pneumothorax / mediastinum

→ pt can also be Hypoxic with normal CxR

Diagnosis:

CxR = Abnormal / normal

Typical CxR = Diffuse Reticulonodular but patchy / focal

progression = "White out"

↳ within 3 days of improper txt.

Effusion = Rare

Hilar + mediastinal Lymphadenopathy ≠ seen

PJP vs viral vs bacterial vs Atypical on CxR = Difficult

Progression of disease = more Dx of PJP

Pneumothorax & pneumomediastinum = may develop

Chronic PJP = fibrosis + cystic lung disease

↳ also called Surgical pneumomediastinum ⇒ Subcutaneous Emphysema

↳ Bubble-wrap

↳ indicative of disease severity

LACTATE DEHYDROGENASE (LDH)

↳ Helpful in Dx of PJP

↳ not Specific for PJP

LDS > 1000 IU/L suggestive of PJP (if other symp present)

⇒ PJP causes cellular damage

LDH ↑ in cellular damage

Definitive Dx

Demonstration of PJP in Lobes

- PCR (sputum) Aspirates) (Gold)
- Giemsa staining
- Indirect immuno-fluorescence

Treatment:

- Aggressive Early txt prevent progression

⇒ High Dose trimethoprim-Sulphamethoxazole (Bactrim) (IV)

↳ 20 mg/kg/day (trimethoprim)

↳ 100 mg/kg/day (Sulphamethoxazole)

(4 divided doses for 21 days)

⇒ Give Corticosteroids — concurrently — 21 days

Work to immunosuppress

as Bactrim kills PJP = ↑ inflammation

∴ more Alveolar damage ∴ more Hypoxic

∴ Give CS to ↓ additional response

PJP prophylaxis:

Bactrim from the 4-6th weeks of life onwards in all HIV infected children

CMV pneumonia

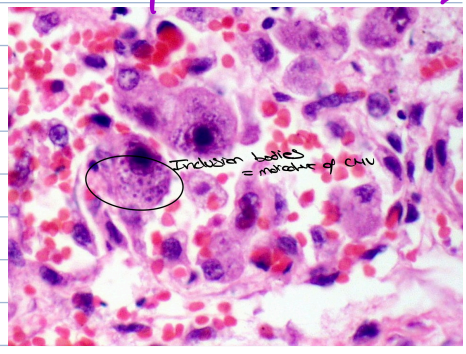
→ Clinically + Radiologically Dx from PJP

→ kids with Low $CD4^+$

→ Dx with PCR, IgGs & viral cultures

→ CMV combo with PJP = common

→ NB owls eyes (inclusion bodies)



Viral pneumonia's

common cause of URTI's

RSV ; Parainfluenza ; Adenovirus

HIV(+) → prolonged RSV antigen shedding

→ ↑ RSV mortality

Other viral pneumonia's

Chicken pox pneumonia (shouldn't get but if Dx = fatal)

Measles pneumonia = ventilation

Uncommon viral pneumonia's

Measles pneumonia → Destructive Rash (PCR)

Varicella pneumonia = overwhelming

Cryptococcus pneumonia

↳ usually causes meningitis } Antifungals — Amphotericin B — fluconazole

↳ Miliary picture

MAC (Mycobacterium Avium complex)

Virulent in immunocompromised
CD4 < 60mm^3
Lower CD4 = ↑ Risk opportunistic infections
⇒ ARV's Super NB

Chest CT-Scans:

Cavitations
Bronchiectasis
Small nodular clusters
→ LIP & MTB cause same lesions

HIV & MAC:

Mostly Intra-Abdominal < Retroperitoneal nodes / Mesenteric nodes
Hepatosplenomegaly
Thoracic Manifestations: Bronchiectasis
: cavitation
: nodular lesions
: large mediastinal nodes
: may lead to esophageal & pulmonary fistula's

Chronic Respiratory Disease in HIV(+) Children

→ LIP (Lymphoid interstitial pneumonia)
→ Bronchiectasis (d.t old & recurrent infections)
→ Aspiration associated lung disease (d.t neurological prob.)
→ Pulmonary Malignancies
- Lymphoma
- pulmonary kaposi sarcoma
→ IRIS (Immune Reconstitution inflammatory syndrome)

Lymphoid Interstitial pneumonia (LIP)

Diffuse lymphocytic infiltration Intra-alveolar septa
Proliferation of BALT
LIP = 33% in HIV (+) children
LIP = occurs in children >1 y/o
LIP = more common in black population.

Clinical presentation:

coughing
General lymphadenopathy
Parotitis (swelling of Parotid Gland - Salivary Gland (ear - jaw) - usually only seen in mumps)
Hepatosplenomegaly
finger clubbing

{Parotitis + Resp symp + finger clubbing = LIP}

LIP = 2 courses: Stable
: Progressing to Resp failure

Can develop chronic lung damage with Bronchiectasis

Dx of LIP:

CXR → Bilateral Diffuse Reticulonodular infiltration
→ No Response to AB
→ With / without Hilar Lymphadenopathy
→ No pathogen isolated
→ can look like PTB or Miliary-TB on CXR
→ Histology (open lung Biopsy)

Txt of LIP:

Anti-Retroviral treatment

Bronchiectasis & HIV

(Most common chronic disease)

Both T & B cell dysfunction + impaired local defence
- impaired muco-ciliary clearance
- Recurrent pulmonary infections

Most common causes of Bronchiectasis:

- LIP
- TB
- unresolved / recurrent pneumonia

(CT-Scan = Gold for Dx of bronchiectasis)

CXR findings

↳ Honeycombing (small cysts)
↳ persistent areas of opacification
↳ widespread lung destruction (fibrosis)

Bronchiectasis treatment:

- Mucous clearance: physiotherapy (postural drainage)
- AB during Acute Exacerbations
↳ treat for 2-3 weeks
- Vaccines (Best way prevent infection)
- Immunomodulation (Macrolides)
- HAART (Highly Active Antiretroviral therapy)

Pulmonary Malignancies:

Non-Hodgkin B cell Lymphoma
→ Broad Ant. Mediastinum
→ Airway compression
Kaposi Sarcoma → bloody effusion (pleural)
→ Air space consolidation
Hodgkin Lymphoma
Leiomyosarcoma → smooth muscle tumor

Aspiration associated Lung Disease:

common in HIV infected

(neurological issues usually in HIV children)

GERD + Nasopharyngeal Reflux may cause:

oesophagitis (candida?)

FTT

Lung Disease

Strictures -> can't swallow properly

↳ secretions into airways

If nasopharyngeal incoordination

-> Look for CNS Abnormality

-> consider HAART

-> careful History of Reflux = NB

Immune Reconstitution Inflammatory Syndrome: (IRIS)

Definition:

exacerbation of Symp. & Radiological manifestations not d.t recurrence / relapse of disease

-> Due to reconstitution of immune sys after Deficiency

↳ watch out for patients when begin ARV'S

Chronic Lung Disease Stats:

LIP -> 57% -> no. has it since ARV's introduced

PTB -> 29%

non-specific pneumonitis -> 14%

Cystic Lung Disease:

-> D.t PJP / LIP

Most need Surgical intervention