Case scenario #4

Approach to Recurrent Pneumonia

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Case Scenario:

- A 3.5-year-old girl presented with her parent to ED complaining of:
  - Fever for the last 4 days
  - Productive cough for the last week, but recurrent cough for the last 2 months, since she chocked with a peanut
  - Shortness of breath when she runs or goes up stairs

Associated symptoms:

- Reduced appetite for the last 2 months with a weight loss of 1.5 kg over the last 2 months

- PMHx:
  - Admitted to the hospital 4 times previously due to a left sided pneumonia. Previous CXRs reported as a left sided hyperinflation then a month later CXR showed a left lower lobe consolidation suggesting pneumonia.
  - No previous surgery done
- Drug Hx: Not on regular medications. However, she has received 3 courses of oral antibiotics with no significant improvement.
- Vaccination Hx: up to age. Pneumocicccal and influenza vaccines were not given

Continue Case scenario:

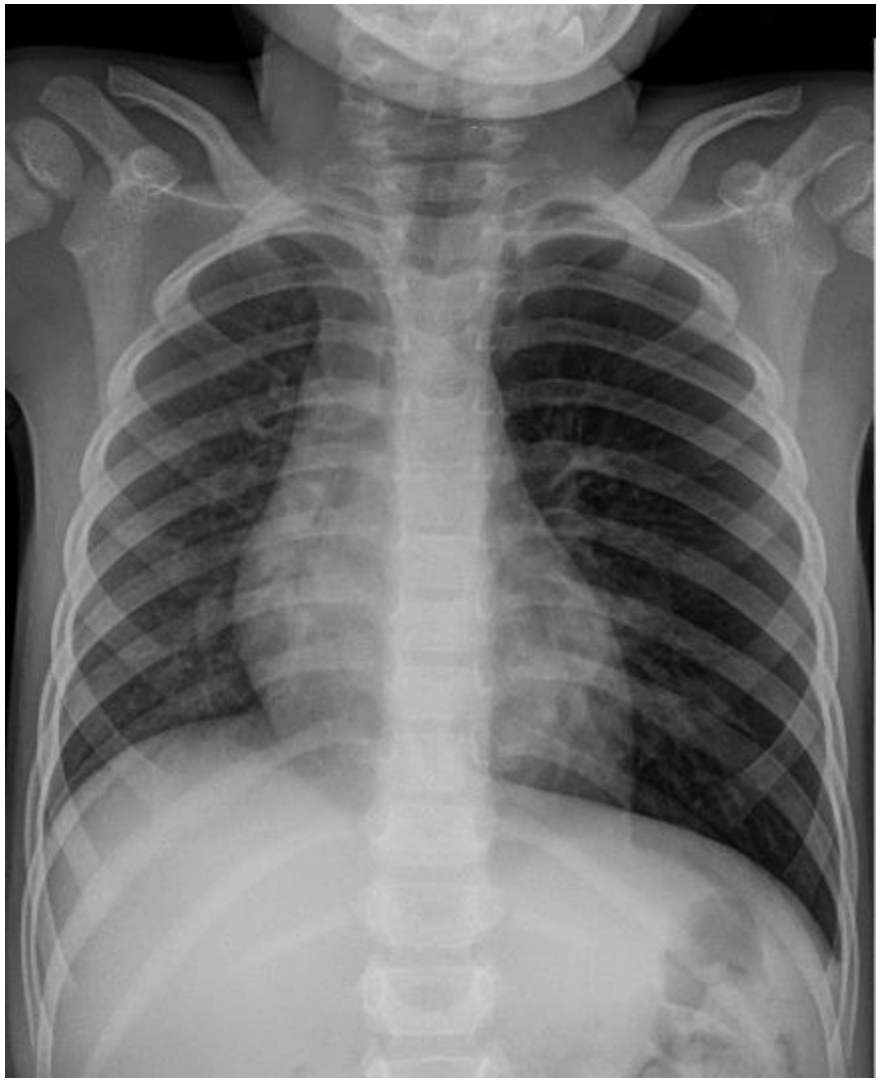
- Perinatal/neonatal Hx: Full term vaginal delivery, no NICU admission.
- Family hx: No similar conditions
- Social history: Father is smoker

❑On Examination: patient was looking well, mildly tachypnoic: RR= 35/min. O Saturation was 95% on RA.

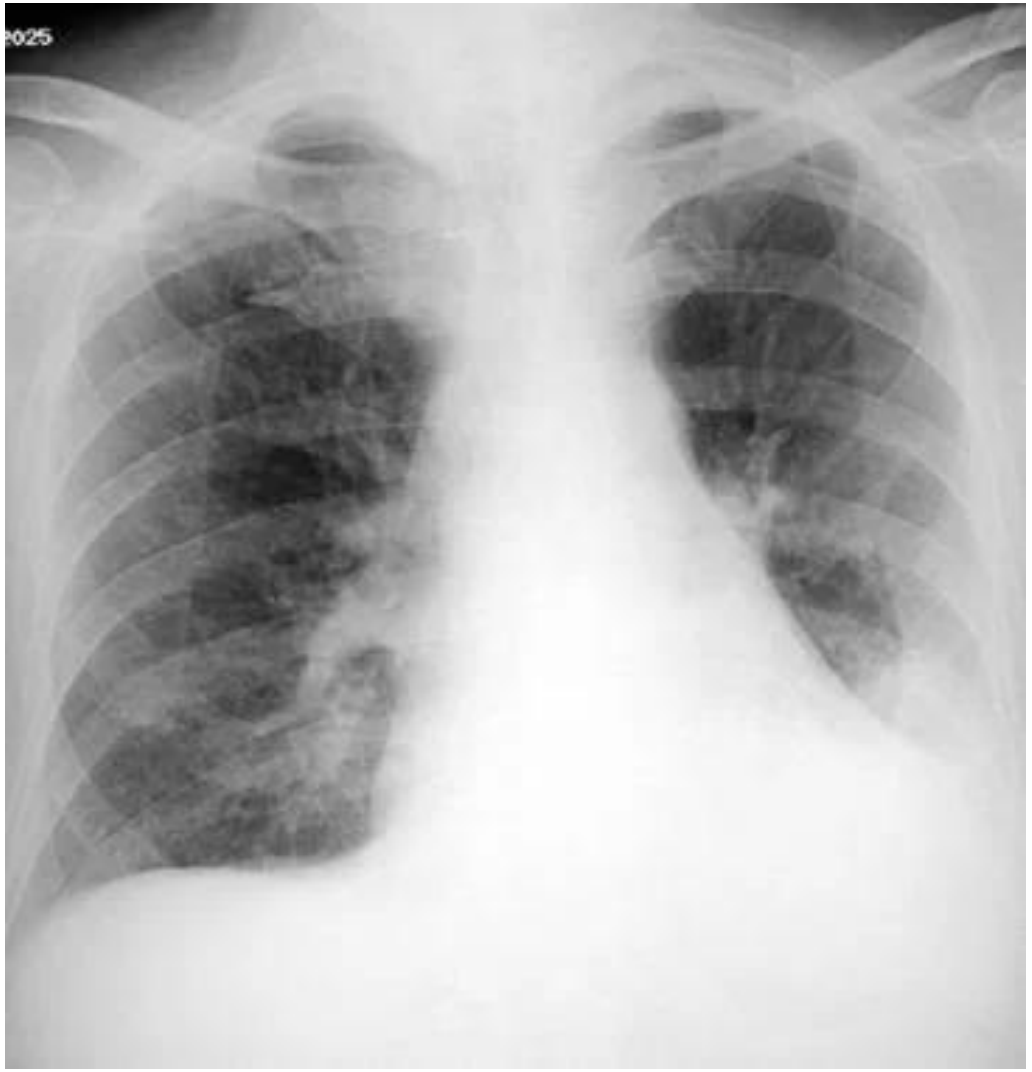
H&N: normal exam with no lymphoadenopathy enlargement.

Chest : reduced entry on the left lower zone with some expiratory wheeze heard at the same site with crackles

Initial CXR 2 months ago: unilateral-hyperinflation



CXR on presentation: collapse consolidation due to recurrent pneumonia related to FB aspiration



- Patient was admitted for a rigid bronchoscopy to take the peanut out.
- Commenced on broad spectrum antibiotic, Rocephin until she is clinically better, inflammatory markers are normal and CXR improved.
- Discharged home on a course of oral antibiotics.

Video of Rigid bronchoscopy for the patient is attached with the next slide

STORZ

Discussion

- A unilateral hyperinflation of the lung with a history of chocking indicates FB aspiration.
- FB should be taken out using a rigid bronchoscopy once suspected.
- If left, FB may lead to a significant infection and inflammation of the affected lobe causing recurrent pneumonia.
- If left for longer, this patient might develop bronchiectasis and a surgical intervention might be required; lobectomy for example.

Recurrent Pneumonia

- **Two episodes of pneumonia within the same year or 3 or more episodes over any period of time but with complete resolution of clinical and radiological findings between acute episodes.**

Etiology of recurrent pneumonia

- **congenital Malformations:**

  A. Airways abnormalities :Tracheosophageal fistula,Tracheomalacia

  B. Lungs: Pulmonary hypoplasia, pulmonary sequestration,congenital pulmonary adenomatoid malformation (CPAM), bronchogenic cyst

  C. Cardiovascular: congenital heart disease, vascular ring.

D. Aspirations : GERD, F.B aspiration, swallowing abnormalities.

E:Defect I the clearance of airway secretions: CF, abnormalities in the ciliary structure function,

F: Disorders of local/systemic immunity:

primary ID

Acquired ID

HIV infection

Immunosuppressive therapy

Malnutrition

Diagnosis: take a detailed history

- **Age onset**: if soon after birth or in early infancy thin of congenital disorder.

- **Details of the episode**s: ask about the first and the other episodes in details.
- **Onset, nature and duration of cough**.
- **Detailed past medical history** including documentation of signs of pneumonia and duration of antimicrobial therapy.

- **Ask about the timing of the symptoms in relation to feeding** and the change in position.
- **PMHX:** hx suggestive of systemic ID, TB, FB aspiration, symptoms of malabsorption, recurrent otitis media, sinusitis, FTT…
- Swallowing dysfunction symptoms.

- **Perinatal Hx:** prematurity, delayed meconium passage (think of CF)
- **Hx of allergic disorders**: asthma, eczema
- **Ask about day care attendance** , passive smoking
- **Family hx of similar conditions**

- **Drug Hx**
- **Vaccination Hx**

Physical Examination

- **Growth parameters :** FTT
- **Clubbing:** present in chronic disorders such as bronchiectasis and CF
- **Lymphadenopathy:** if generalized think of TB, HIV infections
- **Dysmorphic features**: can give a clue to some syndrome and disorders.
- **Skin:** any evidence of infective foci, rash, ,manifestations for ID.
- **HEAD & Neck EXAMINATION**: signs of chronic otitis media, sinusitis, allergic rhinitis (allergic shiners, transverse crease over nose)

Respiratory Examination:

- **Signs of respiratory distress**: tachypnea, retractions..
- Any deformity or scars.
- Auscultation for air entry +/- added sounds

- You need to examine other systems :cardiovascular, abdomen, neuro,….

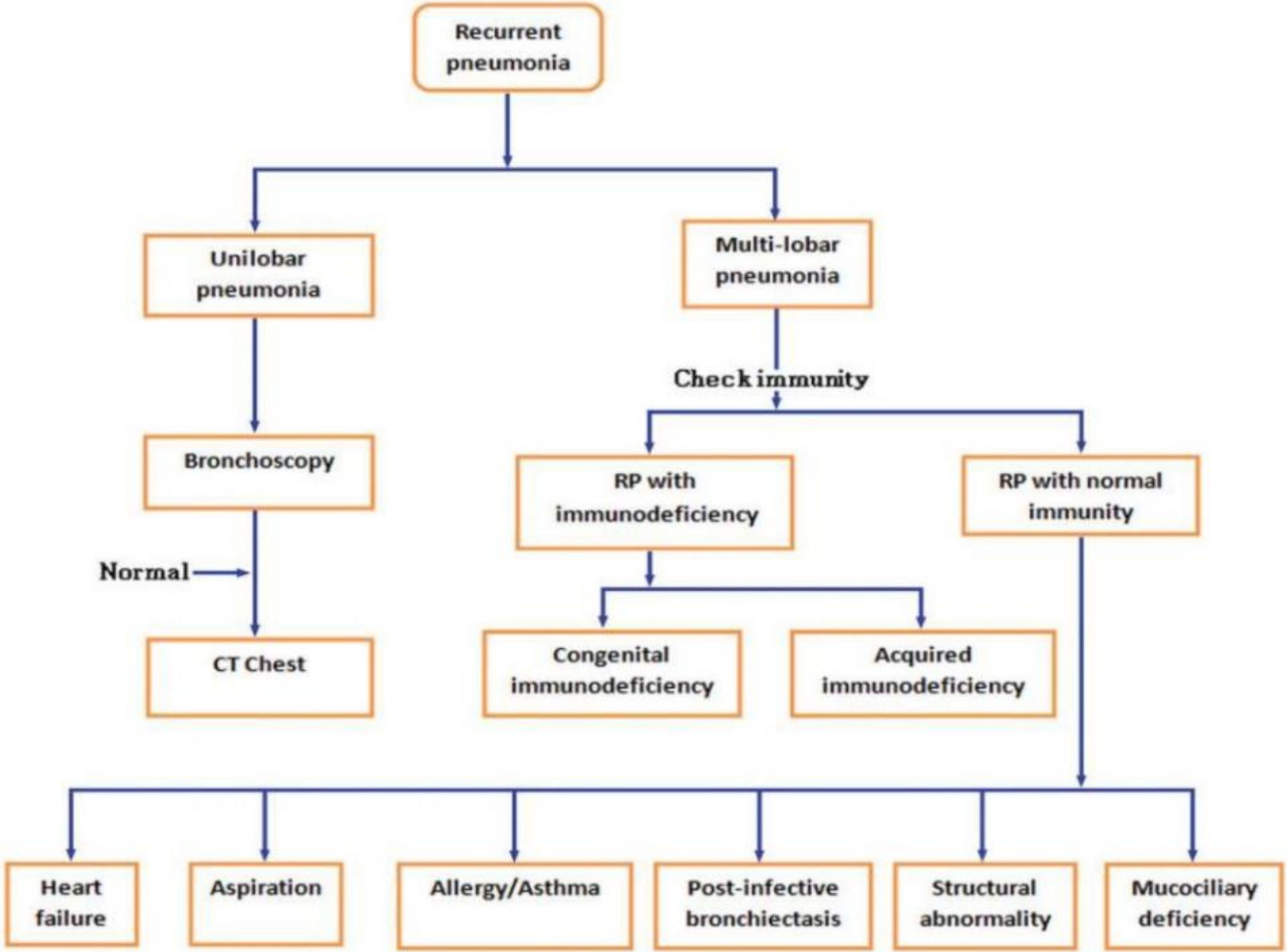
Investigations required

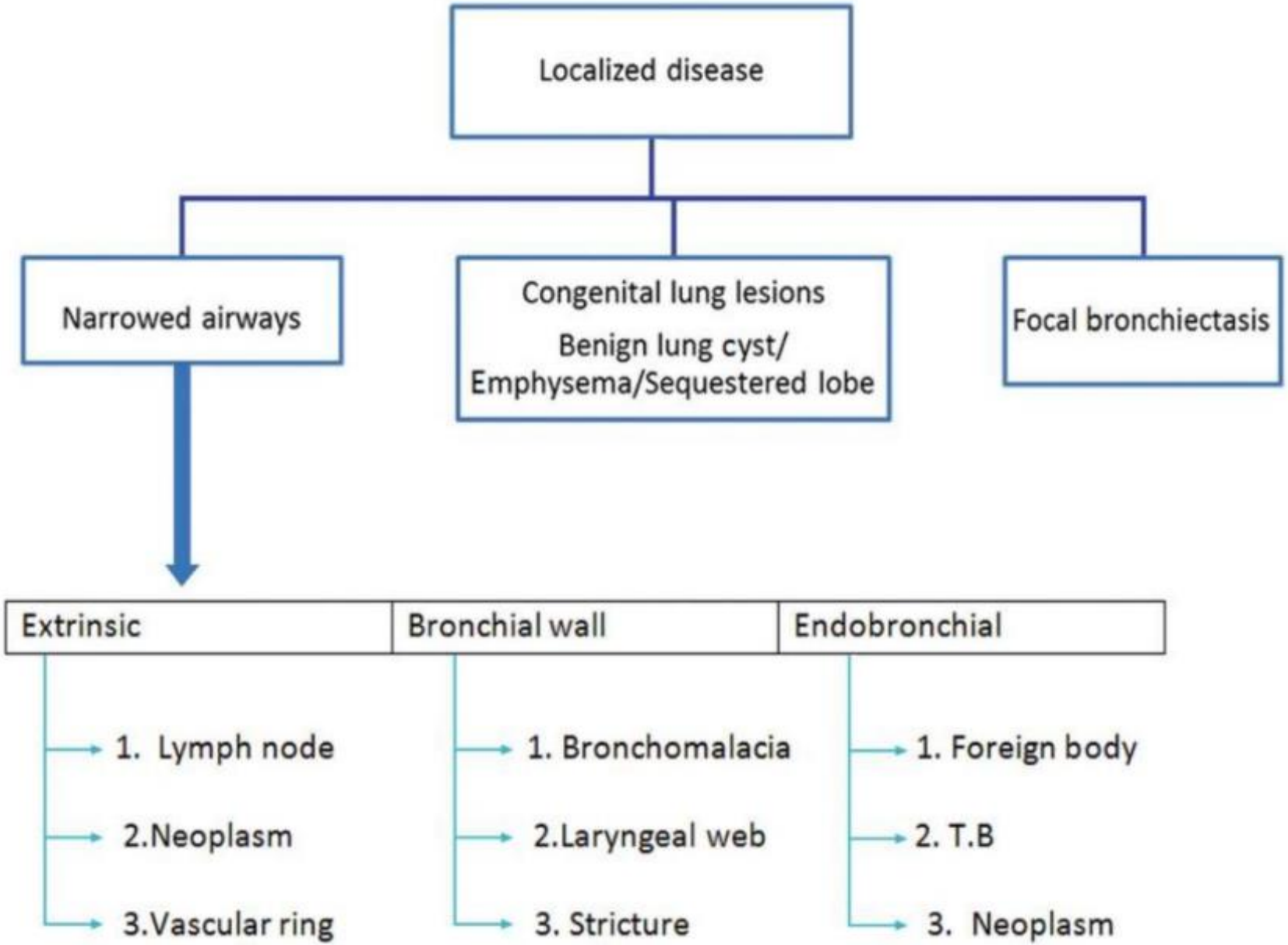
- **CBC:** Anemia may suggest chronic disease. Thrombocytopenia may suggest Wiskott-Aldrich sundrome
- **Chest X ray:** helps making distinction between recurrent and persistent pneumonia and whether consolidation is localized to a single or multiple lobes.
- **Mantoux Test**: if TB infection is suspected
- **Chest CT scan:** to diagnose structural abnormalities. For disease extention

- **High resolution CT scan:** if restrictive lung disease is suspected

- **Sweat Chloride**: if cystic fibrosis is suspected
- **Flexible bronchoscopy**: if abnormalities of airway anatomy is suspected. Bronchoalvealar lavage can help identifying the etiologic agent (pathogen) if infection is suspected.

- **Barium swallow:** to identify swallowing disorders, GERD, Tracheosophagel fistula.
- **Immunological work up**


Recurrent pneumonia
Unilobar pneumonia
Multi-lobar pneumonia
Check immunity
Bronchoscopy
Normal
CT Chest
RP with immunodeficiency
RP with normal immunity
Congenital immunodeficiency
Acquired immunodeficiency
Heart failure
Aspiration
Allergy/Asthma
Post-infective bronchiectasis
Structural abnormality
Mucociliary deficiency


Localized disease
Narrowed airways
Congenital lung lesions
Benign lung cyst/
Emphysema/Sequestered lobe
Focal bronchiectasis
Extrinsic
Bronchial wall
Endobronchial
1. Lymph node
2.Neoplasm
3.Vascular ring
1. Bronchomalacia
2.Laryngeal web
3. Stricture
1. Foreign body
2. T.B
3. Neoplasm

THANK YOU