Respiratory System Examination

Subtitle — Calibri Regular 14pt

Clinical Skills TCD
Title — Calibri Regular 14pt
Date 00/00/00
Resources

http://www.medicine.tcd.ie/clinical-skills/

Approaching the patient

• Be kind
• Be friendly
• Smile
• Introduce yourself clearly & simply
• Ask how the patient would like to be addressed
• Explain that you would like to write a few things down to help you remember the facts
Before doing an examination of the respiratory system a general examination relevant to the respiratory system should be carried out.

- Expose the patient to the waist.
- Position patient sitting at the side of the bed or in a chair.

**General Inspection**

- Dyspnoea/Respiratory Distress
- Respiratory Rate (<14 bpm normal)
- Accessory Muscle Use
- Pattern Of Breathing
- Cyanosis
- Ask patient to take a deep breath
  - Look for chest wall symmetry
  - Stridor

**Inspection Around The Bed**

- Supplemental oxygen/nebulisers
- Non Invasive Ventilation
- Inhalers/Medications
- Examine the sputum pot.
General inspection

The Respiratory Exam
Subtitle – Calibri Regular 14pt

1. **Asterixis**
   ‘Stretch arms’
   ‘Wrists back’
   ‘Spread the fingers’

**Flap Indicates of CO2 Retention**

Also seen in
Liver failure
Renal failure
Hypoglycaemia,
Hypokalaemia,
Hypomagnesaemia,
Barbituate Intoxication.

**Signs of CO2 Retention:**
A-Asterixis
B-Bounding Pulse
C-Confusion
D-Drowsiness
E-Eye sign
The Respiratory Exam

2. Clubbing and Hypertrophic Pulmonary Osteoarthropathy (HPOA)

Vasodilation of the nail bed vessels secondary to unidentified mediator.

- Inspect Nail bed
- Palpate for fluctuance
- Schamroth’s Sign- when nails are opposed diamond shaped window is obliterated in clubbing.
- Palpate wrists for HPOA
Common Causes of Finger Clubbing

**Cardiovascular**
- Cyanotic Congenital Heart Disease
- Infective Endocarditis

**Respiratory**
- Suppurative Lung Diseases
  - Bronchiectasis, Cystic Fibrosis
  - Lung Abscess
  - Empyema
- Lung Carcinoma
  - NSCLC
  - Mesothelioma
- Idiopathic Pulmonary Fibrosis

**Gastrointestinal**
- Cirrhosis
- Inflammatory Bowel Disease
- Coeliac’s Disease
- Thyrotoxicosis
- Familial or Idiopathic

Rare Causes Of Finger Clubbing

- Pregnancy
- Neurogenic Diaphragmatic Tumours
- Secondary Hyperparathyroidism

Unilateral Clubbing

- Bronchial Arteriovenous Aneurysm
- Axillary Artery Aneurysm
The Respiratory Exam

3. Wasting and Weakness

Apical lung tumour (Pancoast tumour) can invade the brachial plexus.
- Wasting of the small muscles of the hand
- Weakness of finger Abduction
The Respiratory Exam

4. ‘Nicotine’ (Tar) Staining
Does not provide evidence of heavy smoking habit!!

5. Pulse
Tachycardia
Pulsus Paradoxus (BP)
Bounding Pulse – CO₂ retention
Examination of the Face

• **Eyes**
  - *Horner’s Syndrome* Apical lung tumour compressing the sympathetic nerves in the neck.
    » Constricted Pupil
    » Partial Ptosis
    » Loss of Sweating

  - *Chemosis*- Oedema of the conjunctiva
    - Indicates CO₂ Retention

• **Nose**
  - *Polyps*
  - *Deviated Septum*

• **Mouth**
  - Tongue for central cyanosis (Lip cyanosis is peripheral)
  - Dentition (Lung Abscess)

• **Sinuses**
  - Palpate for tenderness
Examination of the Neck

1. Trachea
   Slight displacement to the right is common

   Displacement Towards
   Upper lobe fibrosis
   Upper Lobe collapse
   Pneumonectomy

   Displaced away from
   Massive Effusion
   Tension Pneumothorax

   Displaced By
   Upper Mediastinal Masses
Examination of the Neck

2. Tracheal Tug
Finger placed on the trachea feels it move inferiorly with each inspiration. Sign of gross over expansion due to airflow obstruction

3. Cervical Lymph Nodes
Examine from behind the patient
Examination of the Chest

Examine anteriorly and posteriorly by

- Inspection
- Palpation
- Percussion
- Auscultation

Always compare the left and right sides.
Examination of the chest

**Inspection.**

1. **Shape and symmetry of the chest**
   - eg. Barrel Shaped Chest,
   - Asymmetrical movement with massive pleural effusion, pneumothorax, consolidation, collapse.

2. **Chest Deformaties**
   - Pectus Carinatum
   - Pectus Excavatum
   - Kyphoscoliosis
Examination of the Chest

3. Scars

- Surgical scars.
- Chest Drain Sites
- Thoracoplasty
- Phrenic Crush Procedures
- Radiotherapy Marks
- Subcutaneous Emphysema – Pneumothorax / Pneumomediastinum
- Prominent veins – SVC Obstruction
Palpation of the Chest

**Chest Expansion**

Thumbs should move symmetrically apart at least 5cm.

**Vocal Fremitus**

Palm/Edge of the hand placed on the patient's chest while the patient repeats ‘99’

Compare left and right sides.
Palpation of the Chest

Percussion

*Rotate Scapula Anteriorly*

- Normal Lung – Resonant
- Consolidation-Dull
- Pleural Effusion- ‘Stoney’ Dull
- Pneumothorax – hyper-resonant

- Percuss the clavicles, supra-clavicular fossa and into the axilla.
Auscultation of the Chest

- Compare Left and right

- Rotate the scapula when listening posteriorly

- Listen in the apex (Bell) and into the axilla

- Listen for
  1. Quality of Breath Sounds
  2. Intensity of Breath Sounds
  3. Added Sounds
Approximate Surface markers
Quality of Breath Sounds

**Vesicular Breath Sounds** – Louder and longer on inspiration than on expiration. No gap b/w inspiration and expiration.

**Bronchial Breath Sounds** – Hollow quality. Often a gap between inspiration and expiration. Expiratory sound has a higher intensity and pitch than the inspiratory sound.

- Heard over consolidated lung
- Uncommon – Localised Pulmonary Fibrosis
  - Above a Pleural Effusion
  - Collapsed Lung

Intensity of Breath Sounds

Normal or reduced

Causes of Reduced Breath Sounds

Chronic Airflow Limitation
Pleural Effusion
Pneumothorax
Pneumonia
Collapse
Large Neoplasm
Added Sounds

**Wheeze**

- Due to oscillation of opposing airways
- Implies Significant Airway narrowing
- Usually loudest on expiration
- Inspiratory wheeze implies severe airway narrowing.
- *Monophonic localised wheeze*- Fixed bronchial obstruction

Added Sounds

**Crackles** (RALES/CREPITATIONS/CREPS)
- Describe the timing and pitch

**Early Inspiratory Crackles**
- Small Airways Disease
- Chronic Airflow Limitation

**Late or Pan Inspiratory Crackles**
- *Fine* - Pulmonary Fibrosis – ‘Velcro’
- *Medium* – Usually due to left Ventricular failure
- Coarse – Bronchiectasis

**Pleural Friction Rub** - Indicates pleurisy
Sounds

**Vocal Resonance** - Ask the patient to say ‘99’ and repeat auscultation of the chest.
- Over consolidated lung the numbers are clearly audible.
- Over normal lung they are muffled.
- Over an effusion they are absent.

**Whispering Pectoriloquy**
- When whispered speech is distinctly heard over consolidated lung.

**Aegophony**
- Over consolidated lung an ‘e’ sounds like an ‘a’
Additional Tests

JVP- Right Heart Failure

Heart Sounds- Loud P2 in pulmonary hypertension

Cor Pulmonale- Legs Oedema

Liver – Ptosis Emphysema

Pembertons Sign – If SVC obstruction suspected.
  • Raise hands above head for 1 minute
  • Facial Plethora, Cyanosis, inspiratory stridor , non pulsatile elevation of the JVP

Peak Flow- Useful in asthmatic patients.
Thank You