RESPIRATORY MEDICINE

Key points in anatomy and physiology

Upper respiratory tract (nasopharynx; oropharynx; laryngopharynx).

Lower respiratory tract (Left and Right Main Bronchi; Bronchioles; Acini)

Right lung – upper, middle and lower lobes

Left lung – upper and lower lobes

Bronchial arteries and veins; Pulmonary arteries and veins

The pleura and pleural cavities

Anatomical landmarks

- Cervical Lymph nodes
- Intercostal spaces
- Mid-clavicular Line
- Cardiac apex
- Lung bases

The respiratory tract is lined with ciliated pseudo-stratified columnar epithelium.

Pulmonary gas exchange – oxygen and carbon dioxide

Pulmonary ventilation and perfusion

History Taking

Major presentations of disease specific to this system

- Breathlessness
- Cough
- Sputum
- Haemoptysis
- Wheeze
- Stridor
- Chest Discomfort – e.g. pleuritic chest pain

History of the present illness

Breathlessness

- Have you been feeling breathless?
- How long were you breathless for?
- How quickly did you become breathless?
- Did it get better/worse?
- How long did it take to go away?
- How severe is it?
- What can you do to help when you become breathless?

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Cough

- Have you been coughing more than usual lately?
- Has the cough changed?

Sputum (“phlegm”)

- Are you coughing anything up?
- Can you describe it to me?
- What colour is it?

Haemoptysis

- Have you coughed up any blood?
- How much?
- How long have you been coughing up blood for?

Wheeze

- Have you been wheezy?
- What brings it on?

Chest pain

- Have you had any pain in your chest?
- Can you describe it to me?
- Is it a sharp chest pain, worse on inspiration (pleuritic pain)

Stridor

- Is there a harsh noise when you breathe in?

Hoarseness:

- Have you been feeling or sounding hoarse?

Past Medical History (PMH)

- Ask about any past history of respiratory disease, including tuberculosis or other infections.

Review of systems (ROS)

- Ask about symptoms as above.

Family history

- Cystic Fibrosis
- α-1 antitrypsin deficiency

Social history

- including living arrangements, occupational history, marital status, number of children, smoking history, alcohol use, drug abuse, foreign travel, exposure to environmental pathogens.

Increased risk of respiratory disease

- coal miners
- bird owners
- painters

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- bakers
- farmers

Smoking

- Do you smoke?
- Have you ever smoked?
- How many do/did you smoke a day?
- How long did you smoke for?

Alcohol and Drugs

- How much alcohol do you drink per week?
- Has it always been that much?
- Have you ever taken any recreational drugs?

Drug history

- What medicines are you taking at the moment?
- Have these changed recently?

Allergies

- Are you allergic to anything?

Physical Examination

Some common questions/commands

- Is it OK if I examine you?
- Can I look at your hands, please? Could you turn them over for me?
- Can I examine your chest, please?
- Any pains? Is that sore?
- I'm just going to pull down your eyelid if you don't mind... look up for me
- I need to look inside your mouth and at your teeth.
- Can you stick your tongue out for me? And can you point it up? (towards the ceiling)
- I'm going to tap on your back/your chest.
- Take some deep breaths through your mouth, please.
- Breathe in …... And Out.....

Look for (inspection)

- Nicotine/tar staining on the fingers..
- Koilonychia
- Finger clubbing
- Bounding pulse
- Flapping tremor
- Anaemia
- Peripheral cyanosis

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- Central cyanosis
- Use of accessory muscles
- Intercostal in-drawing
- Ankle oedema

Feel for (palpation):

- Tracheal deviation – is it in the midline?
- Where is the apex beat? - normally 5th Intercostal Space, midclavicular line
- Chest Expansion - is it normal or reduced?

Percussion:

- Resonant (normal)
- Hyper-resonant (abnormal)
- Dull (abnormal)
- Stony dull (abnormal)

Listen (auscultation):

- Vesicular Breath sounds with good air entry (normal)
- Reduced Air Entry (abnormal)
- Ronchi (abnormal)
- Wheeze (abnormal)
- Crackles (abnormal)
- Bronchial Breathing (abnormal)
- Friction Rub (abnormal)

Differential Diagnosis – common clinical conditions

- Asthma
- Chronic Obstructive Pulmonary Disorder (COPD)
- Bronchiectasis
- Pulmonary Embolism (PE)
- Pneumothorax
- Tuberculosis
- Pneumonia
- Lung Cancer
  - Small Cell or Oat Cell
  - Large Cell
  - Squamous cell
  - Adenocarcinoma
  - Mesothelioma
- Asbestosis

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- Coal Worker's Pneumoconiosis
- Sarcoidosis
- Pigeon Fancier's Lung
- Pulmonary Fibrosis/
- Wegner's Granulomatosis
- Goodpasture's Syndrome
- Obstructive Sleep Apnoea Hypopnoea Syndrome (OSAHS)

Investigations

Peak expiratory flow rate

Plasma

- White cell count
- ACE activity (test for sarcoidosis)
- Immunology screen
  - including anti-neutrophil cytoplasmic antibodies (ANCA)
- Arterial blood gases

Imaging

The Chest X-Ray (CXR)

- May be Posterio-Anterior (PA), Anterio-Posterior (AP) or Lateral
- Report:
  - Patient Demographics/Date + Time of X-ray
  - Lung fields - are they equally translucent?
  - Apices - ?masses ?cavitation ?consolidation
  - Trachea - ?deviated or midline
  - Heart - ?Cardiomegaly ?Cardiophrenic angles
  - Diaphragm ?depressed by hyperinflation
  - Costophrenic Angles - ?well defined
  - Soft Tissues - ?breast shadows ?surgical emphysema
  - Hila - ?masses ?lymphadenopathy
  - Bones - ?fractures - look at ribs, vertebrae, both scapula. ?Bone metastases
- CT scan of thorax
- Isotope scanning
- CT Pulmonary angiography
- Lymph node biopsy
- Bronchoscopy
- Lung biopsy
- Pleural aspiration and biopsy

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Management of Diseases

- Inhalers
  - Short Acting B2 agonist – salbutamol (Ventolin) – blue inhaler
  - Inhaled Corticosteroid – beclomethasone/budenoside – brown inhaler
  - Long Acting B2 agonist preparation – salmeterol – purple inhaler
  - Sodium Chromoglycate
  - Leukotriene Antagonists – Montelukast
- Oxygen therapy
- Mucolytics – Carbocysteine Tablets
- Cough Suppressions – Codeine Phosphate.
- Oral Corticosteroids
- Chemotherapy, radiotherapy, surgical treatment for cancer.
- Antibiotics
- Anti-tuberculous chemotherapy
- Anti-fungal drugs
- Anticoagulation (heparin, warfarin)
- Chest physiotherapy
- Artificial ventilation

Case

Example History (*D = doctor*, P = patient)

Can you tell me what brought you into hospital today?

Well I think I have a chest infection; I've been getting very breathless and bringing up green stuff.

Alright, has this happened to you before? Do you usually cough up something?

Yes, most of the time I cough up something every day. It's not normally green though. I usually have to go to the doctor a few times a year and get told that I have a chest infection.

I see. Tell me more about what you cough up. How much do you cough up?

I' say about a cup full of clear mucus every day, usually in the morning. Like I said before, it sometimes turns green and then I go to the doctors.

Green you said? Have you ever coughed up any blood?

No, never.

You said you were breathless....Can you give me an idea of how bad the breathlessness is?

Not too bad. Usually I'm not breathless but recently I've been unable to get about myself. I've been finding it difficult to do the shopping.

And can you tell me how quickly this came on? How long ago were you your normal self?

It came on suddenly, over a few days. I was able to get about as normal last week.

Have you had any pain with that?

Yes, a little right here on my left side. It's sharp when I breathe in.

Ok, I see. Do you suffer from any wheeze at all?

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Sometimes I get a bit wheezy but only when my breathlessness is really bad.

And are you on any medication?

I sometimes take paracetamol for pain – but not often. I have a blue inhaler (salbutamol) for my chest but nothing else regularly. I've been taking antibiotics and steroids whilst in hospital.

Ok, I see. Do you have any other health problems, either now or in the past?

No, just the chest infections in the past.

Any health problems that run in the family?

No, not that I'm aware. My mother has angina.

Ok, and do you smoke? Drink alcohol? Take drugs?

Yes, I do smoke. I have done for the past 20 years – about one full pack per day. I don't drink much – just the odd glass of wine and drugs have never interested me; I've avoided them.

Ok, and do you have any worries about your health? What do you feel about your condition?

On the whole, it doesn't bother me, but I'm afraid it will get worse. I know smoking is bad and cancer is a worry – I've tried to give up in the past but I just find it really difficult. At the moment though, my health doesn't really bother me – just the odd chest infection. I just don't want to end up like my mother who needs the doctors a lot.

I see, well let's talk about that....

Case summary

Here we have a 55yr old woman who presented to hospital with increasing shortness of breath and a change in character of her usual smoker's cough. She reports coughing more frequently and a change in the character of her sputum which has changed from clear, serous fluid to a thick green mucus over the past few days. This has been accompanied by a right sided pleuritic chest pain. Normally, she would cough up about half a cup of clear fluid in the morning. She takes salbutamol for breathlessness when it gets bad, but reports not taking anything regularly. She has not coughed up any blood.

She has smoked 20 cigarettes per day for the last 20 years (20 pack year) and has the occasional glass of wine. There is no relevant family history.

Based on the history, this woman has presented with a lower respiratory tract infection on a background of bronchiectasis.

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