The adult with recurrent breathlessness

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Medicine

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Dyspnoea

Subjective experience of breathing discomfort

Variable among individuals with apparently similar degrees of impairment

Part of the warning system for humans to recognize when they are at risk of receiving inadequate ventilation

Important when it interferes with activities of daily living

Mechanisms of dyspnoea

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- Increased respiratory drive
- Physical constraints on breathing
- Psychological disorders
- Respiratory muscle dysfunction

Increased respiratory drive

Receptor	Examples	Sensation
Peripheral chemoreceptors	↓ pO_2 in COPD, pulmonary fibrosis	Air hunger
Central chemoreceptors	↑ pCO_2 in COPD ↑ H^+ in metabolic acidosis	
Pul stretch receptors *(RAR's)*	Bronchoconstriction of Asthma & COPD Pneumothorax	Chest tightness
Pul C-fibre receptors *(Juxta-pul capillary receptors)*	Pulmonary congestion of Heart Failure	

Physical constraints on breathing

	Examples
Lower airway	Asthma, COPD
Lung parenchyma	Pulmonary fibrosis, pulmonary oedema
Upper airway	Tracheal stenosis
Chest wall	Obesity, mesothelioma, old empyema
Pleura	Pleural effusion, pneumothorax
Abdomen	Ascites, pregnancy

Respiratory muscle dysfunction

	Examples
Hyperinflation	COPD, asthma
Chest wall	Kyphoscoliosis
Muscle weakness	MND, Myasthenia gravis

Psychological disorders

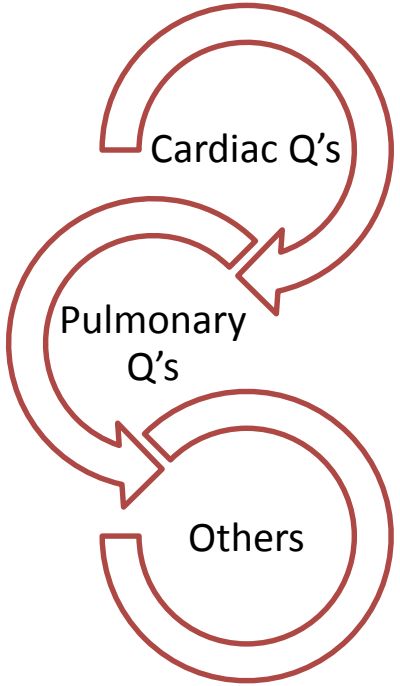
	Examples
Anxiety	Hyperventilation syndrome

Mechanisms unclear

	Examples
Pul Vascular Disease	Pulmonary hypertension
Lung inflammation	Interstitial pneumonias

Work-up of the persistently dyspnoeic patient

Initial
History & PE
Hb, Cr, HCO3
SpO2
ECG
CXR



Work-up of the persistently dyspnoeic patient

Lung Function Tests	Imaging Studies
PEFR	CT thorax
Spirometry & Flow loops	High-resolution CT thorax
Lung vol, Diffusing capacity	CT pulmonary angiogram
Methacholine challenge	
Exercise testing	

Work-up of the persistently dyspnoeic patient

Cardiac Evaluation	Psychiatric Evaluation
Echocardiogram	
Exercise stress testing	
Nuclear studies	

Pearls: Dyspnoea & Heart Disease

- The symptom of chest tightness or the feeling of oppressiveness in the chest experienced with angina may be confused with dyspnoea, but careful questioning usually establishes the difference.

- Dyspnoea as an anginal equivalent may be the sentinel symptom of IHD in the COPD patient.

- The major important historical finding of cardiac dyspnoea is orthopnoea.

Pearls: Positional Dyspnoea

- Orthopnoea:
  - CCF
  - COPD
  - Bilateral diaphragmatic weakness
- Trepopnoea:
  - Unilateral lung damage
- Platynoea:
  - Hepatopulmonary Syndrome with right-to-left shunt
  - Right-to-left shunt through Patent Foramen Ovale

Pearls: PND

- PND may be common to both heart & lung disease.
- When of cardiac origin, PND is characterized by an overwhelming sensation of choking; cough if present follows the dyspnoea.
- PND of pulmonary origin is due to collection and plugging of secretions in the airways; patients present with an initial paroxysm of coughing, followed by dyspnoea.

Pearls: Dyspnoea of Anxiety

- Dyspnoea of anxiety is often present at rest and usually improves with exercise and activity.
- *“Not able to get enough air into my lungs …”*
- Heightened sensation of breathing may be accompanied by non-exertional chest pain.

Pearls: Pulse Oximetry

- It is easily performed and accurate in most clinical situations.
- Like the ECG and CXR, normal results do not rule out significant disease.
- If normal initially, oximetry can be repeated with exercise and if found to be abnormal, indicates underlying disease.

Pearls: Spirometry

- Spirometric measurements alone do not make a clinical diagnosis.
- It is not prudent to treat suspected obstructive or restrictive lung diseases without spirometry.
- All smokers over the age of 45 with symptoms of dyspnoea, mucus hypersecretion or wheeze should have spirometry.

Pearls: Dyspnoea in End Stage Disease

- Concerns about contributing to addiction and physical dependence should never limit effective treatment or palliation of dyspnoea.

- The “principle of double effects” provides a rationale for using opioids or sedatives that might hasten death, provided that the purpose of increasing doses is to relieve dyspnoea.

- Anxiety and depression frequently accompany dyspnoea and require evaluation.

Summary

Diligence

Prudence

Compassion

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