

Dyspnea

Summary from Rosen's By Ashley Phipps

Epidemiology

- Very common presenting sx, occurs in all ages, causes range from benign to life-threatening

Pathophysiology

- Actual mechanism unknown
- Normal breathing controlled centrally by respiratory center in medulla oblongata and peripherally by chemoreceptors near carotid bodies and mechanoreceptors in diaphragm/skeletal muscles
- Sensation of dyspnea thought to be 2/2 any imbalance leading to \uparrow ventilatory demand $>$ capacity, \uparrow WOB, and \uparrow respiratory drive

Differential Diagnosis

- Extensive differential with many pulmonary and non-pulmonary causes:
- Critical
 - Airway obstruction
 - PE
 - Noncardiogenic edema
 - Anaphylaxis
 - Ventilatory failure
 - MI
 - Cardiac tamponade
 - Toxins (carbon monoxide & organophosphates)
 - DKA
 - Epiglottitis
 - Tension pneumothorax
 - Flail chest
 - Acute chest syndrome
 - CVA, Intracranial insult
- Emergent
 - Spontaneous pneumothorax
 - Asthma
 - Cor pulmonale
 - Aspiration
 - Severe pneumonia
 - Pericarditis
 - Anemia
 - Pneumothorax or hemothorax
 - Diaphragmatic rupture
 - Renal failure
 - Electrolyte abnls
 - Metabolic acidosis
 - Sepsis
 - Bowel obstruction
 - Hypotension
 - MS, Guillain-Barre, Tick paralysis
- Non-emergent
 - COPD
 - Pleural effusion
 - Neoplasm
 - Pneumonia
 - Congenital heart dz
 - Valvular heart dz
 - Cardiomyopathy
 - Pregnancy
 - Ascites, Obesity
 - Somatization disorder
 - Hyperventilation syndrome
 - Panic attack
 - Thyroid dz
 - Fever
 - Rib fractures
 - ALS, porphyria, polymyositis

Signs and Symptoms

- Patient descriptions of dyspnea vary greatly, consider duration, onset, and positional changes including orthopnea and paroxysmal nocturnal dyspnea
 - Dyspnea may be associated with exertion, trauma, fever, cough, sputum production, hemoptysis, anxiety, chest pain, diaphoresis, and nausea/vomiting
- Key physical exam findings are tachypnea, cyanosis, tachycardia, hypotension, fever, AMS, obesity, barrel chest, "tripod" positioning, clubbing, pale skin/conjunctiva, stridor, JVD, retractions, wheezes/rales, decreased breath sounds, friction rub, subcutaneous emphysema, cardiac murmurs or gallops, muffled heart sounds, unilateral leg edema, focal neuro deficits, and diffuse weakness

Work-up

- All patients should be placed on a pulse oximetry monitor to determine if hypoxia is present
- Most patients should be placed on noninvasive waveform capnography, cardiac monitors, and have an EKG performed
- Depending on the severity and most likely cause other studies may be warranted such as an ABG, serum electrolytes, CBC, bedside ultrasound, CXR, cardiac markers, D-dimer, BNP, CT angiography, and duplex venous ultrasound

Empiric Management

- Supplemental oxygen and assisted ventilation as necessary
- Critical diagnoses should be stabilized immediately including decompression of the chest for a tension pneumothorax, intubation if patient's airway or ability to protect it is compromised, parenteral epinephrine if significant wheezing or anaphylaxis. continuous beta-agonist nebs and steroids if severe asthma exacerbation

- Emergent patients may require admission to an intermediate care unit versus an observation unit depending on their improvement with ED management and their risk of deterioration
- For most non-emergent patients, the symptoms will abate and they can be discharged home with medical follow-up

** Figure 25-1 and 25-2 in Rosen's volume 1, 8th edition, pages 211-212 show diagnostic and management algorithms