Medical Emergencies Presenting as Acute Dyspnea

Lecture 26

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Outcomes

At the completion of this lecture, you will be able to:

- Recognize that the patient's experience of shortness of breath is a ***subjective*** one that requires a careful assessment of history, physical, and ancillary pulse oxymetry and capnography
- Recognize that although there is no one simple pathophysiologic cause that will explain all dyspnea, ***66%*** of patients will have some cardiac or pulmonary etiology
- Recognize that a clinically safe approach to assessment and treatment of dyspnea is an aggressive approach
- Recognize that a dyspnic patient who may need airway management and ventilatory support (NSC 7-1).

Clinical Judgment

- Rapidly recognizing patient acuity
- Anticipating problems and acting before they occur
- Rapid ABCs / O2M4 and VS / Assist rate + TV PRN
  - BP
  - Pulse : rate, pattern, and quality
  - Resp. : rate, pattern, and quality
  - Temp
  - O_2 sat
  - CO_2

Causes of Dyspnea

Immediate life threats

- CV
  - Coronary disease /***ACS***
  - Pulmonary edema
  - Pulmonary embolism
- Airway obstruction
- Tension pnthx
- CNS / N-M
  - OD
  - GBS
  - Botulism

Most common

- CV
  - Coronary disease / ***ACS***
  - CHF / Pul Edema
- COPD
- Asthma
- Pneumonia
- Hyperventilation syndrome
- Psychogenic; panic disorder

Hypoxia

- O2 sat. < 94 : mild hypoxia
- O2 sat. < 91 : moderate hypoxia
- O2 sat. < 86 : severe hypoxia

- Tx goal : oxygenation above ***90%*** sat

Shunting

"Shunting" may be thought of as bypassing the lungs [as if blood were shunted, without oxygenation, from the RV to the LV]

"Heart" causes

- CHF / Pulmo. Edema
- Pulmonary embolism
- Shock

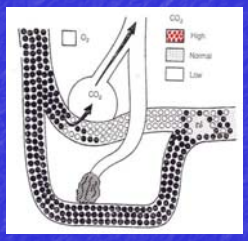
Lung causes

- Pneumothorax
- Pneumonia
- Atelectasis [small area of unexpanded lung tissue]

V / Q Mismatch and Shunting

Hypoxemia causes:

- V / Q mismatch
  - Areas of lung are perfused (Q), [black] but not ventilated (V) [pnthx]
- R to L Shunt [not pictured]
  - Areas of lung are ventilated (V) , but not perfused (Q) [shock]
- Hypoventilation
  - CO2 retention
  - CO2 displaces O2



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Causes of Hypercapnia

Lung	CNS	Neuro-muscular
COPD	CVA	Obesity
Increased dead space	OD	Kyphoscoliosis
Upper airway obstruction	Infection	MG GBS OP; botulism

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Causes of Wheezing

CV	UAO	Lower Airway
Cardiac pulmonary edema	FBAO	Asthma
Non-cardiac pulm edema (ODs; HAPE)	Allergic ACE I	COPD
Pulmonary embolism	Infection epiglottitis	Transient hyperactivity (infection; smoke; chlorine gas)

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Respiratory Failure

Severe distress (WOB may actually *decrease*)

- End organ failure
  - Skin: cyanosis
  - Brain: confusion
  - Muscle: floppiness

Respiratory arrest

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Treatment

Prevention of Respiratory Failure / End Organ Failure

- Aggressive intervention
- Non-invasive PPV / CPAP first
- Issue of hypoxic drive?
  No; *cannot* treat respiratory failure with *2 L* O2 NC

Goal:

- Prevention of respiratory arrest
- Prevention of consequences of respiratory failure
  - ↓ oxygenation [above 90% sat] → end organ failure
  - ↓ ventilation → ↑ CO2 → acidosis → shock [PEA]

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Summary

- Prioritizing assessment and treatment
- Rules for integrating evaluation and stabilization :
  - Primary Assessment / Treatment
    - ABCDE / O2M4
- Importance of initial interventions for dyspnea
- Hypoxic drive is not a contraindication for aggressive treatment treatment
- Grading hypoxia severity
- Causes of shunting and hypoxemia
  - Either or both : shock-shunting and hypoventilation-shunting

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