The Air I Breathe

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Dyspnea

• What comes to mind when you think of lung disease or breathing problems?
Descriptive Words for Dyspnea

- Winded
- Short of breath
- Tired
- Tight
- Labored
- Fatigued
- Suffocating
- Drowning
- Air hunger
- Anxious

Basic Anatomy of the Lung
Basic Anatomy of the Lung

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Basic Anatomy of the Lung
Control of Breathing

- Respiratory control center is in the brainstem (medulla)
  - Functions automatically outside of consciousness

Various Receptors

- Medulla receives input from many other receptors
  - Chemoreceptors
    - Carotid body
    - Aortic arch
    - Raphe and retrotrapezoid nucleus of medulla
  - Mechanoreceptors
    - Stretch receptors
    - J receptors
  - Others
    - Irritant receptors
    - Facial receptors
Pathophysiology of the Lung

• Disease states that can lead dyspnea
  – Cancer
  – CHF
  – COPD
  – Restrictive lung diseases
  – Pneumonia
  – ALS or other musculoskeletal disease

Psychological Aspect of Breathing

• Dyspnea is worse when...
  – Occurs suddenly without expectation
  – Occurs at an inappropriate time
  – Is perceived as life threatening
  – Feels out of control
Psychological Effect

- Intensity of experience is often influenced by prior experience.

Treating Dyspnea

- Besides opiates, what can we do?
  - Education
    - About disease
      - Including issues relating to death
    - About interventions and treatments
    - About techniques
      - Pursed lip breathing
      - Tripod breathing
      - Trained coordinated breathing
  - Train and condition
Therapies

– Guided imagery
– Cognitive behavioral therapy
– Aroma therapy
– Music therapy
– Prayer/meditation

Opioid Receptors

• Opioid receptors are found in many locations not associated with pain
  – Lung tissue
  – Carotid bodies
  – Medulla
  – Limbic and higher cortical areas
Opioids and Dyspnea

- Opioids appear to blunt response to hypercapneic and hypoxic ventilatory drives
- Opioids appear to tone down inspiratory drive without leading to hypopnea
- Functional MRI studies show impact on activity in anterior insular cortex/limbic system when opioids are given
- Naloxone can worsen dyspnea with exercise

Opioids and Dosing

- When dosed correctly, opioids don’t:
  - Lead to hypopnea
  - Decrease overall ventilation
  - Work by decreasing LOC
  - Reduce life expectancy
Treating Dyspnea

• Traditional medicine
  – Opioids
  – Anxiolytics
  – Bronchodilators
  – Oxygen or air

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Questions

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