COPD with Respiratory Failure Case Study #21

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Patient:

- Mr. Hayato
- 65 year old male
- Brought to ER with severe SOB
- Past History of emphysema
- Longstanding chronic obstruction pulmonary disease (COPD)
  - Secondary to tobacco use
    - Still smokes
    - 2 PPD, 50 years

Diagnosis:

- Acute respiratory distress
- COPD
- Peripheral vascular disease

Hospital Stay:

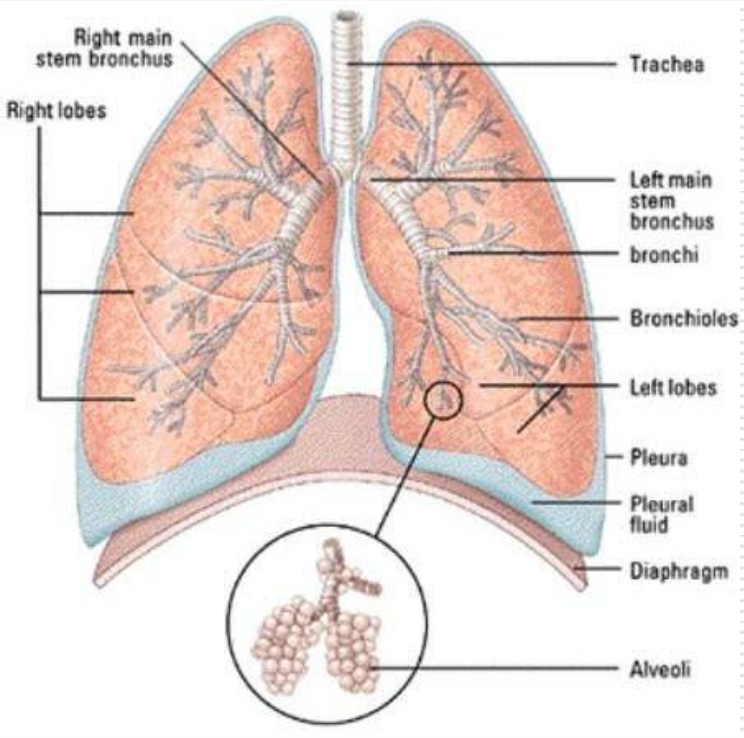
- In ER, endotracheal intubation occurred and patient was placed on ventilator at 15 breath/min with FiO2 at 100%
  - ABGs were used each morning to guide setting on ventilator
- Enteral feeding started on day 2
- High gastric residuals TF was discontinued, PPN started
- Day 4, TF started again and PPN discontinued day 5

COPD Facts

- 4th leading cause of death
- Smoking is primary risk factor
  - ~80-90% COPD deaths are caused by smoking
- Other risk factors:
  - Exposure to air pollution, second-hand smoke and occupational ducts and chemicals
  - History of childhood respiratory infections
  - Heredity, deficiency of ATT-protein which protects the lung against destructive actions

COPD Etiology

- Progressive disease
- Referring to two diseases
  - Emphysema
  - Chronic Bronchitis
- Both usually co-exist in COPD



http://www.shoppingtrolley.net/images/anatomy/lungs.jpg

Emphysema

- Destruction of air sacs (alveoli) where O and CO2 are exchanged
- Damage is irreversible
- As sacs are destroyed, less oxygen is able to transfer, causing SOB
- Lungs lose elasticity, which is important to keep airways open
- Exhaling is difficult because air become trapped in the lungs

Chronic Bronchitis

- Inflammation and scarring of lining of the bronchial tubes
- Decreased air flow
- Heavy mucus is coughed up
- Defined as the presence of a mucus-producing cough most days of the month, 3 months a year, for 2 years without underlying disease explaining the cough

Diagnostic Measures

- Spirometry
  - Simple, noninvasive breathing test
  - Measures volume of air coming out of the lungs and how fast it can be blown out
  - Can detect COPD before symptoms become severe

Measures of Pulmonary Function

- Physical examination using stethoscope listening for different sounds
- Pulse oximetry
  - Light waves measure the oxygenation of arterial blood

Treatment

- Lifestyle changes
  - Smoking cessation
  - Avoiding smoke and air pollutants
  - Exercising as tolerated
  - Good nutrition
- Meds to prevent and control symptoms
- Pulmonary rehab

Nutrition Therapy

- Malnutrition occurs in 24%-35% of patients with COPD
- Weight loss of 5%-10% of UBW
- Associated with increase REE because of the work to breath, reduced nutrient intake, and inefficient fuel metabolism

ADIME

- Assessment:
  - 65 year old male with COPD
  - 13# wt. loss before admission; decrease appetite
  - Admit wt=122# Ht=5’4” BMI=20.9
  - UBW=135# IBW=130#
  - Usual diet supplying ~845 kcal and 51g PRO
  - Estimated needs :
    - 1590 kcal (based on Irenton-Jones)
    - 66.5-94.4 g PRO (1.2-1.7g/kg)
    - Fluid: 1,942.5 mL (35mL/kg)

ADIME

- Diagnosis: PES
  - Inability to consume oral intake related to medical interventions because of acute respiratory distress as evidence by patient being ventilated at 15 breath/min with a FiO2 at 100%
  - Inadequate caloric intake related to decrease appetite caused by symptoms from COPD as evidence by patient usual diet intake supplying 53% of needs and 13 lb weight loss

ADIME

- Intervention: Tube Feeding Prescription
- Isosource
  - Goal: 55cc/hr continuously over 24 hours
  - TF ~80% free water supplying ~1056 cc free water; bolus ~844cc H2O to meet water requirement
  - Start at 20cc/hr, advance as tolerated every 8 hours by 10cc until goal met at 55cc/hr
  - Provides: 1,584 kcal, 56.8 g PRO, and 1,900 cc free water

ADIME

- Monitor/evaluation
  - TF tolerance and gastric residuals
  - Labs, weight
  - ABG, specifically CO2
    - If increased indicated of being overfed with carbohydrates
    - Cause complications on vent

Questions?

References

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