COPD Exacerbation preceded by Viral Bronchitis

Kyle Tidwell, OMS-III, Roland Brown, MD
DeBusk College of Osteopathic Medicine, Lincoln Memorial University, Knoxville, TN 37932
West Tennessee Healthcare, Henry County Hospital, Paris, TN 38242

Introduction

- COPD is an obstructive lung disease that is the result of long-term exposure to tobacco smoke, pollution or other inhaled irritants with tobacco smoke being the most common cause.
- The pathophysiology of COPD starts with exposure to lung irritants which cause damage to the small airways in the lungs.
- The damage to small airways causes changes in the epithelium which reduce the immune defenses.
- Smoke exposure causes an increase in goblet cells as well as a loss of club cells and ciliated cells in the small airways.
- Over time, these changes to the small airways can lead to hyperinflation of the lungs as well as air-trapping.
- Patient with COPD will have symptoms of chronic cough and shortness of breath.
- There are a few different things that can trigger an exacerbation of COPD, and these include viral and bacterial infections as well as environmental pollution. These trigger a worsening of the patient's symptoms.

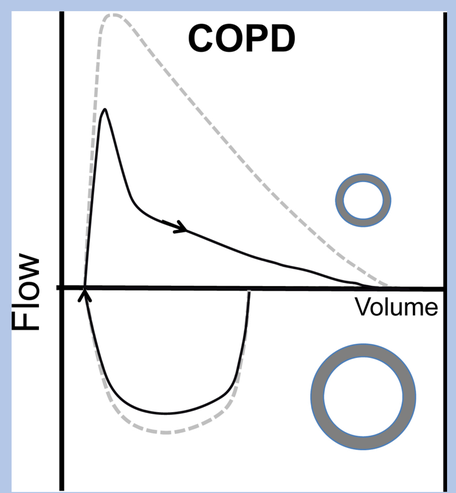

Figure 1: This is a flow volume loop showing the changes between normal lungs shown with the dashed line and lungs with COPD shown with the solid line. This is a great visual representation of the changes in PFTs in a patient with COPD.

Case Description

Presentation:

- 86-year-old male presented with 5 days of productive cough and shortness of breath that has been worsening. He was seen in the ER on day 1 of symptoms and was diagnosed with viral bronchitis and prescribed prednisone. His symptoms have continued to worsen despite taking the prednisone and using his albuterol inhaler at home.

Review of Systems:

- Negative for fever and chills or chest pain, otherwise unremarkable

Past Medical History:

- COPD, HTN

Physical Exam:

- Wheezing auscultated in all lung fields bilaterally

Laboratory:

- WBC 11.9H
- Procalcitonin WNL
- Renal Panel WNL
- Troponin WNL

Imaging:

- Chest X-ray results:
  - The lungs are grossly clear but hyperinflated
  - There is minimal blunting of the right costophrenic angle which likely represents some pleural scarring
  - There are no pleural effusions

Differential Diagnoses:

- COPD exacerbation
- CHF exacerbation
- Pleural effusion
- Acute Bronchitis
- Pneumonia

Treatment:

- Duoneb for 1 hour
- Solumedrol 125mg IV
- Terbutaline 0.5mg sq
- Magnesium sulfate 1gm IV
- Rocephin 1 gm IV

Discussion

- We treated our patient with short acting beta agonists and anticholinergics to relax his small airways and allow for better air movement in his lungs. We used corticosteroids to help decrease airway inflammation and gave an antibiotic to help treat his infection.
- In patients diagnosed with COPD, upper respiratory infections need to be watched closely as these carry a risk of triggering an exacerbation.
- In addition to treating any infections quickly, it is also important for patients with COPD to be treated with inhaled corticosteroids and long-term bronchodilators. These treatments have been shown to decrease the frequency of COPD exacerbation.
- While the treatments we currently have for COPD have been shown to decrease the frequency of exacerbations some, more research to find better ways to prevent COPD exacerbations would be beneficial.

Osteopathic Pearls

- Notable treatment techniques for obstructive lung disease include rib raising, doming the abdominal diaphragm, thoracic inlet myofascial release and thoracic lymphatic pump.
- It is common to find tissue texture changes at T2-T7 because of the viscerosomatic reflexes
- Rib dysfunctions are also commonly found in patients with COPD

References