NR507 Week 3 Case Study-GOLD

Advanced Pathophysiology (Chamberlain University)

Pathophysiology & Clinical Findings of the Disease

1.   Are the spirometry results consistent with obstructive or restrictive pulmonary disease?

What is the most likely pulmonary diagnosis for this patient?

  A spirometry is a type of pulmonary function test. This test measures how much air is

inhaled and exhaled out of a patient's lungs. It also measures how fast the air is inhaled and

exhaled. The main volumes for interpretation are the forced vital capacity (FVC), which is the

total amount of air that can be expelled from full lungs (Langan, R.C. & Goodbred, A.G. 2020),

and the forced expiratory volume in one second, (FEV1). If there is a normal FVC and a

decrease in the FEV1/FVC ratio, then this indicates the potentiality of an obstruction defect.

According to the Global Initiative for Chronic Obstructive Lung Disease (GOLD) criteria,

patients with less than 70% or 0.7 FEV1/FVC ratio indicate obstructive pulmonary defect,

(2020). In this case study, the patient is most likely experiencing obstructive pulmonary disease.

The patient did a spirometry test and his FVC is 93%, FEV1 64%, and FEV1/FVC ratio is 69%.

His FVC is normal at 93%, but his FEV1/FVC ratio has decreased at 69%. These results are

consistent with obstructive pulmonary disease.

2.   Explain the pathophysiology associated with the chosen pulmonary disease.

  Obstructive pulmonary disease is the result from the combined processes of peripheral

airway inflammation and narrowing of the airways. This leads to the limitation of airflow, and

the destruction and loss of alveoli. One of the main risk factors for chronic obstructive

pulmonary disease (COPD) is smoking. The epithelial cells that line the airways are irritated due

to the smoke inhalation. Overtime, chronic irritation and inhalation causes small airway disease

and parenchymal destruction, (McCance, K.L. & Huether, S.E. (2019). The long term inflammation causes the constriction of bronchi that reduces the airflow in the lungs. Reduced airflow on exhalation leads to air trapping and carbon dioxide retaining resulting in reduced inspiratory capacity. The abnormality in gas exchange occurs due to the reduced airflow and ventilation from the destruction and loss of alveolar structure(McCance, K.L. & Huether, S.E. (2019). Low blood oxygen levels, and increased blood carbon dioxide levels result from imparied gas exchange and can worse as the disease progresses.

3.   Identify at least three subjective findings from the case which support the chosen diagnosis.

        Subjective findings that support the chosen diagnosis are the patient's complaints of fatigue, increased dyspnea for the past 3 months, and the shortness of breath that has not improved that he feels like that is getting worse. He also states that he has a dry, nonproductive cough in the morning. The abnormality in gas exchange from the obstructive pulmonary disease is most likely the reason why the patient is experiencing fatigue, shortness of breath, and increased dyspnea.

4.   Identify at least three objective findings from the case which support the chosen diagnosis

        Objective findings that support the chosen diagnosis are seen in the chest x-ray that shows lungs are hyper-inflated bilaterally with a flattened diaphragm. Upon auscultation, his lungs have bilateral wheezes heard with forced exhalation along with a prolonged expiratory phase. He is also tachypneic with a respiratory rate of 22, and his SaO2 is low at 93%. All these findings are consistent with obstructive pulmonary disease.