
Infectious Respiratory Diseases (COPD, Asthma, Tuberculosis)

Introduction

Respiratory diseases defined as any disorders or diseases of the lungs and airways affects the human respiratory system. Respiratory system disease mainly affects the structures and organs of breathing like nasal cavities, pharynx, larynx, the trachea, bronchi, bronchioles, lungs tissues and respiratory muscles. Infectious respiratory diseases are caused by various types of germs- viruses, bacteria and other pathogenic microbes. Infection is caused by germs can often spread by mucus and saliva (also known as a secretions) when a person talks or laughs, sneezes and coughs. Respiratory tract is more vulnerable to infection from external environment because of its constant exposure to chemicals, various particles and other infectious organism in ambient air. Respiratory diseases impose a serious health problem globally. Three of these disease COPD, asthma and tuberculosis are most common diseases which cause severe illness and also lead to death.

COPD (Chronic Obstructive Pulmonary Disease)

COPD refers to a set of progressive respiratory disease conditions that directly or indirectly blocking the airflow and leads into breathing difficulty. It is a curable and treatable disorder of respiratory system which includes lungs and 90% of it caused by smoking. It includes chronic bronchitis (sore or damage of bronchial tubes) and emphysema (abnormal enlargement of the alveoli with loss of pulmonary elasticity). "Millions of Americans are affected by COPD and responsible for death in the USA." (American lung association. (2019). Chronic obstructive pulmonary disease. PBS. Retrieved from <https://www.lung.org/lung-health-and-diseases/lung-disease-lookup/copd/>)

Causes

- Smoking
- Exposure to fumes (burning fuel from cooking and heating)
- Prolonged exposure to dust, air pollutants and chemicals
- Genetic factors (alpha-1-antitrypsin deficiency)
- Age (older adults)
- Children who suffer from lung diseases in their childhood are susceptible for COPD in their adulthood
- Diet (insufficient nutrients and poor unhealthy dietary pattern)
- Previous medical history of any progressive respiratory diseases (example, asthma, pneumonia and so on)

Signs and Symptoms

- Breathing difficulty
- Shortness of breath

-
- Persistent cough (white, yellow, sticky, clear, or greenish)
 - Excessive mucus in lungs
 - Wheezing or whistling during inhalation and exhalation
 - Tightness of chest (pressure on chest wall)
 - Blue nails and lips (later stage of COPD)
 - Weight loss
 - Headaches
 - Lack of sleep
 - Extreme fatigue
 - Swelling of feet, ankles or legs (later stage of COPD)
 - Susceptible for other chronic respiratory infections (cold, pneumonia, flu and so on)

Diagnostic Evaluation

- Assessment of client (medical history, family history)
- Pulmonary function test
- Chest x-ray
- CT scan
- Arterial blood analysis
- Laboratory test (blood, sputum test)

Complications

- Pneumonia
- Acute respiratory distress syndrome
- Depression
- Heart failure
- Frailty

Prevention

Prevention is better than cure.

1. Smoking is the leading cause of COPD and is the biggest risk factor. There are numerous options to quit smoking by visiting hospitals and community associations.
2. Hand -washing should be done properly after sneezing or coughing or even before preparing food. Always carry hand sanitizers.
3. Keep your house free from dust and smoke. Bathrooms and sinks need to be free from mold and mildew.
4. Diet- Try to eat a balanced diet and always drink plenty of fluids.
5. Proper care of all equipments including breathing and nebulizers.

Asthma

Asthma is a respiratory condition which is marked by spasms in the bronchi of the lungs, causing difficulty in breathing, it usually results from an allergic reaction or other forms of hypersensitivity. Normally people with this disease have problems while breathing when they are in the presence of what are called triggers worldwide around 250,000 people die every year

because of asthma.

Causes

- Some allergens are responsible to cause asthma such as tree, grass and weed pollens, fungus, animal and cockroach particles.
- Swelling in the airways.
- Genetics
- Smoking tobacco
- Environmental factors which include: pollution, Sulphur dioxide, cold temperature, and high humidity.
- Pregnancy
- Stress
- Atopy

Signs and Symptoms

- Shortness of breath
- Chest congestion
- Coughing
- Wheezing

Diagnosis

- Assessment of client: client medical history, family history
- Physical examination mainly focusses on the upper respiratory tract, chest and skin
- Spirometry test can provide an indication of lung function
- Chest x-ray
- Electrocardiogram
- Complete blood count
- Ct scan of lungs
- Gastroesophageal reflux assessment
- Examination of sputum

Complication

- Permanent narrowing of bronchial tubes.

Prevention

1. Asthma prevention has first aim to control over allergies causing agent such as pet dander and pollen.
2. Asthma inhalers are preferred as a daily treatment which helps to prevent symptoms.
3. Medication which includes inhaled corticosteroid (Flovent, Pulmicort) are used to control over lung swelling.
4. Quick relief beta 2 Agonists like Albuterol are used as rescue inhalers when symptoms occur.

Tuberculosis

It is infectious disease which is caused by mycobacterium tuberculosis bacteria. It mainly affects the lungs. Most of infections do not always have sign and symptoms in which it is known as latent tuberculosis. Tuberculosis is spread through air when people who have active tuberculosis in their lungs. 2 billion people infected worldwide, estimated 8.8 million new cases in 2011.

Causes

- Mycobacterium tuberculosis bacteria spread by an air when person laughs, talks, sneezes and coughs.
- It is mainly caused by the close contact with a person infected with tuberculosis.
- Easier to contact with weak immune system.

Signs and Symptoms

- Cough
- Chest pain
- Coughing up blood
- Night sweats
- Weight loss
- Chills
- Loss of appetite
- Fatigue
- Dyspnea

Diagnosis

- Patient history which includes medical history.
- Chest x-ray
- Sputum examination
- Sputum culture
- Blood test
- CT scan
- ELISA test

Prevention

1. People who are suffering from tuberculosis should wear mask while communicating.
2. BCG vaccine.
3. Regular medical follows up.
4. Isolation of patient.
5. Natural sunlight.
6. For active tuberculosis people should take antibiotics for at least 6 to 9 months.
7. Most common tuberculosis drugs are isoniazid, rifampin, ethambutol, pyrazinamide

References

- American lung association. (2019). Chronic obstructive pulmonary disease. PBS. Retrieved from <https://www.lung.org/lung-health-and-diseases/lung-disease-lookup/copd/>
- COPD. (2017, August 11). Retrieved from <https://www.mayoclinic.org/diseases-conditions/copd/diagnosis-treatment/drc-20353685>
- H. (2019, January 02). 10 Causes of COPD. Retrieved from <https://factly.com/conditions/copd/10-causes-of-copd/>
- K. G. (2019, March 6). Most Common Signs Of COPD. Retrieved from <https://www.activebeat.com/health-news/11-signs-that-you-may-have-copd/>
- McIntosh, J. (2018, November 16). Tuberculosis: Causes, symptoms, and treatments. Retrieved from <https://www.medicalnewstoday.com/articles/8856.php>
- Mustafa, S. S., & Ramsey, A. (n.d.). Asthma Causes, Types, Symptoms & Treatment. Retrieved from https://www.medicinenet.com/asthma_overview/article.ht
- Pietro, M. D. (2018, September 3). 5 potential complications of COPD. Retrieved from <https://www.medicalnewstoday.com/articles/322970.php>
- Tuberculosis (TB): Symptoms, Signs, Causes, Transmission & Contagiousness. (n.d.). Retrieved from <https://www.webmd.com/lung/understanding-tuberculosis-basics#1>