

COPD as a systemic disease: a Review

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ABSTRACT

COPD (Chronic Obstructive Pulmonary Disease) is a chronic lungs disease characterised by airflow limitation that is often preventable and treatable but not curable. It include emphysema and chronic bronchitis. The main cause of COPD is smoking. Non-smokers can get COPD too. Characteristically COPD starts after the age of 40. Breathing in smoke and its chemicals can tigger an inflammatory response in airways and alveoil and can injure them. This may lead to COPD. The inflamation in COPD increase as disease severity increase. In advanced COPD does not seem to respond to corticosteroids. This articals states a review of COPD, history, its etiopathogenesis, clinical manifestation and preventive measures. Medication usually combines different kinds of bronchodilator medications or pair a steroid with a bronchodilator. Each drug in the combination works in their own way to manage COPD symptoms to give you better control over the disease. Combination medications for COPD are generally are available as an inhaler.

Key words: Lungs Disease, COPD, Respiratory Infection, Emphysema, Bronchitis.

I. INTRODUCTION

Chronic Obstructive Pulmonary Disease (COPD) is a lung progressive disease.Smoking is a primary risk factor,but long term exposure to other lung irritants can also contribute.Treatment aims to manage symptoms and prevent complication,often involving medications,pulmonary rehabilitation,and lifstyle changes.

COPD is a prevent and debilitating respiratory condition that affect million of people world wide.Unlike many other disease,COPD is characterised by its gradual progression and the limitation it imposes on the affected individuals.It presents a unique challenge to the patients,healthcare profrssionals and public health initiatives due to its complex nature and significant impact on quality of life.

Unique Aspects of COPD

Progressive Nature:

One of the most distint features of COPD is its progressive nature.It is a slowly envolving disease often developing over year or even decades with symptoms gradually worsening over time.The chronic and irreversible damage to the airways and lungs tissue make it a significant challenge to manage effectively.

Irreversible Damage

Unlike some other respiratory condition COPD involves irreversible damage to the lungs.The chronic inflamation and narrowing of the airways as well as destruction of lungs tissue make it difficult to restore normal lungs function.

Multifactorial causees

COPD is caused primarily by exposure to harmful partical of gases in the air,most commonly from smoking.However its important to note that not all smokers develop COPD and some individuals who have never smokes can still develop the disease.Other factors such as genetic predisposition and exposure to enviornmental pollutent also play a role making the disease etiology more complex and multifactorial.

Exacerbations and flare-upd

COPD patients are susceptible to acute exacerbations which are sudden worsening of symptoms beyond their usual day to day variation.These exacerbation further compromises lung function and overall health leading to increased healthcare utilization and a higher risk of mortality.

HISTORY OF COPD

Chronic Obstructive Pulmonary Disease (COPD) has recognized for centuries,it was not until 20th century that it was formally characterized. By the late 20th century COPD was recognized as a major global health concern,

leading to significant research, treatment advances and public health efforts to reduce smoking rates and improve air quality.

The beginnings of our clinical understanding of the chronic bronchitis component of COPD can be traced to Badham [1814].

Who used the word catarrh to refer to the chronic cough and mucus hypersecretion that are cardinal symptoms.

In 1679, Swiss physician Theophile Bonet referred to "Voluminous Lungs".

In 1769, Italian anatomist Giovanni Morgagni reported 19 causes of turgid lungs.

In 1814 British physician Charles Badham identified chronic bronchitis as a disabling health condition and part of COPD.

Baillie in 1789 published a series of illustrations of the emphysematous lungs putting forth the pathology of the disease of the chest.

In 1846 John Hutchinson invented the spirometer. This device measures vital lung capacity.

Gradually this damage causes the air sacs to rupture and create one big air pocket instead of many small ones.

COPD Structure-



ANATOMY OF COPD

Chronic Obstructive pulmonary disease is a condition in which the airways in the lungs and air sacs become damaged.

As the lungs become more damaged over time, it becomes increasingly difficult to breathe.

Chronic obstructive pulmonary disease is characterized by poorly reversible air flow obstruction and abnormal inflammatory responses in the lungs.

The chronic airflow limitation of COPD is caused by a mixture of small airways disease [Obstructive Bronchiolitis] and parenchymal destruction (emphysema). The relative contributions of which vary from person to person.

Emphysema develops over time and involves the gradual damage of lung tissue, specifically the destruction of the alveoli.

PATHOPHYSIOLOGY

Abnormal inflammatory response of the lungs due to toxic gases



Response occurs in the airways,parenchyma and pulmonary vasculature



Narrowing of the airways takes place

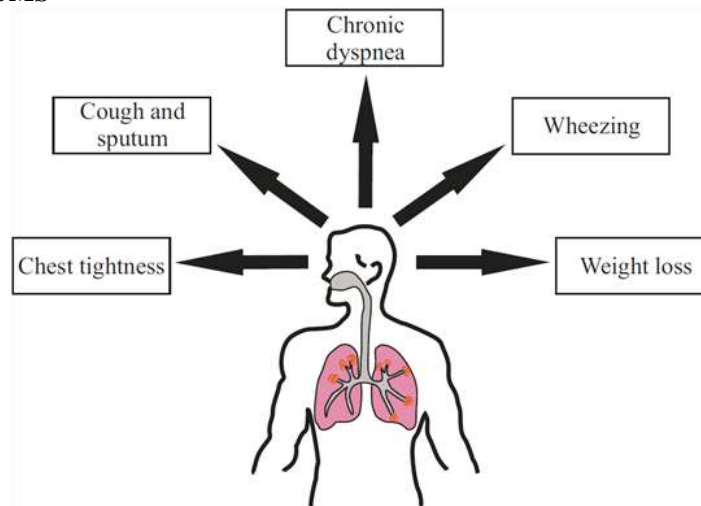


Distraction of parenchyma leads to emphysema

Bronchiolitis obliterans is a type of obstructive lungs disease of the small airways.

It is rare disease with characteristic features of of ribrosis of terminal and distal bronchioles and spirometry showing air low obstruction.

SIGN AND SYMPTOMS



- 1]Shortness and breath especially during physical activities.
- 2]Chest pain
- 3]Wheezing
- 4]Pale skin
- 5]Chronic pain
- 6]Fatigue

Others symptoms of COPD include-

- Dizziness
- Bladder problem
- Bloating
- Drowsiness
- Swelling in the lower legs itching

A chronic cough that may produce mucus that may be clear white yellow or green.

- Frequent respiratory in reaction

-Lack of energy

-Unintended weight loss

People with COPD are also likely to experience episodes called exacerbations.

An ongoing cough or cough that produces a lot of mucus, sometimes called smokers cough.This is often the first symptoms of COPD.

Because their lungs are not functioning as well as they should people with COPD are more likely to experience chest infection,Including the common cold flu.

PRECAUTIONS

The best way to prevent COPD is to never start smoking and if you do smoke, to quit smoking

is responsible for up to eight out of ten COPD related deaths and 38 percent of us.

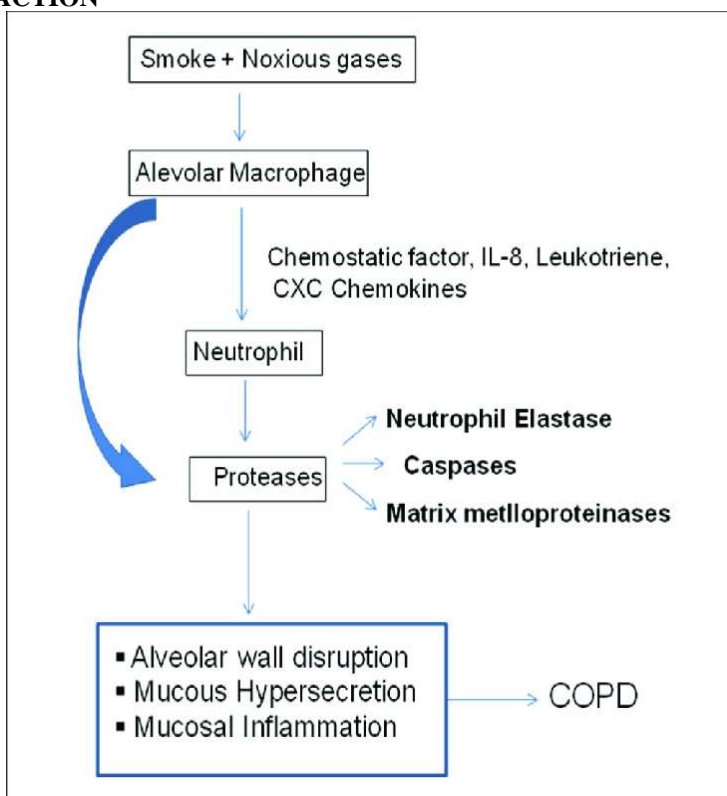
Tobacco or smoke triggers inflammation [irritation and swelling] that narrow the airways smoke also damage cilia.

- 1]Quit smoking and chewing tobacco.
- 2]Wash your hands before and after your meal.

3]Cover your mouth and nose at the time of coughing and sneezing.

- 4]Turn on the exhaust fan at the times of working.
- 5]Minimize the usage of air fresheners, hair sprays and deodorants.
- 6]Use air purifiers.
- 7]Do some jiffy exercise to improve the oxygen and blood circulation.

MACHANISM OF ACTION



The airways and tiny sacs in the lungs lose their ability to stretch and shrink back. The walls between many of the air sacs are destroyed.

Patients with COPD go through a diminished self protective mechanism due to reproductive of Nrf2 in level resulting in lower endogenous antioxidants production.

In COPD increase in CAMP levels, activation of pka and enhanced protein phosphorylation have the potential to reduce inflammation and immunomodulation, relax airways smooth muscle, inhibit chemotaxis and abnormal release of inflammation and cytotoxic inhibitors reduce proliferation migration of inflammatory cells.

II. CONCLUSION

COPD is a chronic, progressive disease and as such exerts an escalating burden over time. The authors have shown that information provided in recent years about the rate of COPD decline in COPD patients strongly support the concept that the faster progression of functional impairment in COPD occurs early and it particularly occurs in gold stage 2. This is in contrast with Fletcher and Peto analysis. It shows the efficacy of an early strategy of intervention on the natural history of such a disorder.

REFERENCE

- [1]. <https://www.ncbi.nlm.nih.gov/pmc>.
- [2]. <https://www.careinsurance.com/co>.
- [3]. <https://www.ncbi.nlm.nih.gov/pmc>.



- [4]. <https://www.medicalnewstoday.com>
- [5]. [researchgate.net](https://www.researchgate.net)
- [6]. [dovepress.com](https://www.dovepress.com)
- [7]. <https://www.cdc.gov/respiratory>
- [8]. [ncbi.nlm.nih.gov](https://www.ncbi.nlm.nih.gov)
- [9]. Reid M B.COPD as a muscle disease. Am J Respir Crit Care Med 2001; 164(7):1101-1102
- [10]. Decramer M, Janssens W. Mucoactive therapy in COPD.
- [11]. Mahler DA, Donohue JF, Barbee RA, et al. Efficacy of salmeterol xinafoate in the treatment of COPD.
- [12]. <http://www.ema.europa.eu>.
- [13]. Global Initiative for COPD. Global strategies for the diagnosis, management, and prevention of chronic obstructive pulmonary disease. 2015.
- [14]. <http://www.goldcopd.org>. Accessed 25 May 2015.
- [15]. National Drug Administration Drug Evaluation Center. Tiotropium bromide olodaterol inhalation spray: Chinese prescribing information; 2018.
- [16]. <http://www.pmda.go.jp>.
- [17]. <http://www.ema.europa.eu>.
- [18]. Dhillon S. Tiotropium/olodaterol: a review in COPD. *Drugs*. 2016; 7(1):135-46
- [19]. <https://www.cdc.gov/copd>
- [20]. <https://www.healthline.com/health>