EC PULMONOLOGY AND RESPIRATORY MEDICINE
Conceptual Paper

COPD a Conceptual View

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Chronic Obstructive Pulmonary Disease (COPD) is characterized by persistent airflow limitation that is usually progressive and associated with an enhanced chronic inflammatory response in the airways and the lung to noxious particles or gases.

Exacerbations and comorbidities contribute to the overall severity in individual patients.

The mechanisms underlying airflow limitation in COPD are:

In Small airways: Airway inflammation, airway fibrosis, and luminal plugs and increased airway resistance. Parenchymal destruction is caused by loss of alveolar attachments and decrease of elastic recoil.

Pathology

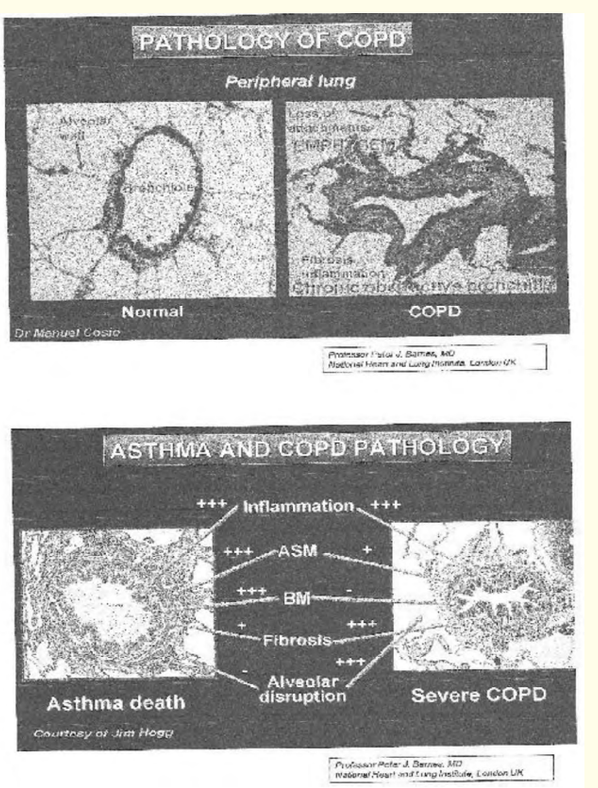

Figure 1.

COPD is a leading cause of morbidity and mortality worldwide.

In coming decades, the burden of COPD is expected to increase due to continued exposure to COPD risk factors and aging world population. COPD is related with a substantial financial burden.

There are various risk factors for COPD: genes, exposure to particles; like tobacco smoke, occupational dusts, both organic and inorganic, indoor pollution from heating an cooking with biomass in poorly ventilated dwellings and last but not the least amongst the very many outdoor air pollution. Other contributory factors can be age, lung growth and development, respiratory infections, chronic bronchitis, socioeconomic status, and asthma/bronchial hyperreactivity.

Diagnosis: Clinically COPD can be considered in patients with dyspnea, chronic cough or sputum production, and with a history of exposure to risk factors.

A spirometry is required to arrive at a diagnosis. The presence of a post-bronchodilator FEV 1/FVC < 0.70 substantiates the presence of persistent airflow limitation and thereby COPD.

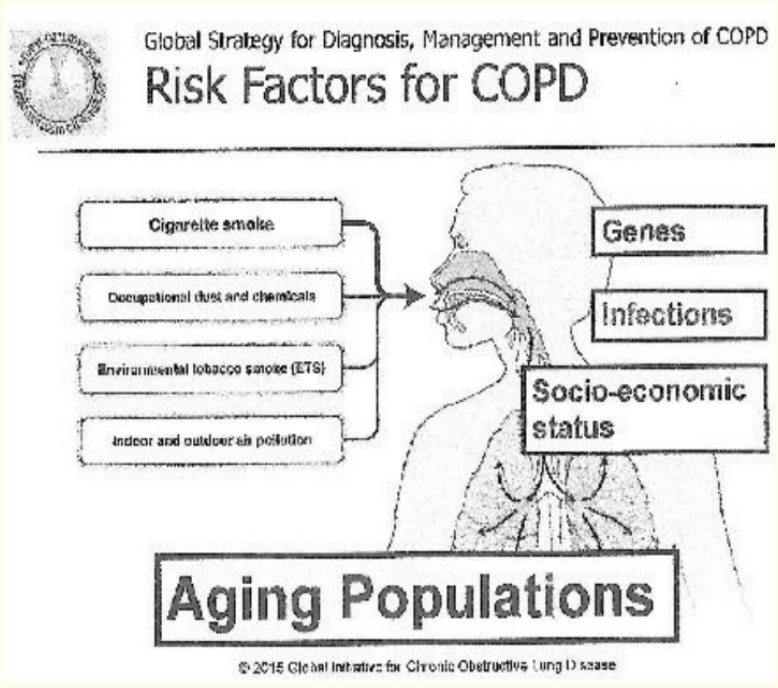

Figure 2.

The purposes of the assessment of COPD are to decide the severity of the disease, comprising the severity of airflow limitation, the impact on the patient's health status, and risk of future events.

Comorbidities, which are frequent in COPD patients, should be actively looked for and if present, be treated appropriately.

Furthermore, the aims of assessment of COPD are to decide the severity of the disease, its influence of the patient's health status and the threat of future events to guide therapy. The current level of symptoms, the severity of Spirometric abnormality, the frequency of exacerbations, and the presence of comorbidities, all should be considered individually.

The characteristic symptoms of COPD are chronic and progressive dyspnea, cough, sputum production which can vary from day-to-day.

The assessment of COPD is done by: COPD Assessment Test (CAT) – an 8-item measure of health status impairment, Clinical COPD Questionnaire (CCQ) as per the 2015 Global Initiative for COPD. Assessment of symptoms is also achieved by the mMRC (Breathlessness measurement suing the Modified British Medical Research Council Questionnaire. The BDI (baseline Dyspnea Index), a validated interviewer-administered rating of severity of dyspnea; is another valuable tool used in the assessment which consists of 24 items divided in three domains, functional impairment, magnitude of task and magnitude of effort. The Transitional Dyspnea Index (TDI) is another valuable tool, which is interviewer-administered questionnaire.

As per the Global Strategy for Diagnosis, Management and Prevention of COPD (GOLD standard) the classification of severity of airflow limitation in COPD (based on post-bronchodilator FEV1) in patients with FEV1/FVC < 0.70 COP is classified into

GOLD 1: Mild FEV 1 > 80% predicted GOLD 2: Moderate 50% < FEV1 < 80% predicted GOLD 3: Severe 30% < FEV1 < 50% predicted and GOLD 4: Very severe FEV1 < 30% predicted.

A combined assessment of COPD is suggested. Using the assessment of symptoms, assessment of degree of airflow and assessment of risk of exacerbations. Combine these assessments for the determination of improving the controlling of COPD.

COPD patients are at risk for: cardiovascular diseases, osteoporosis, respiratory infection, anxiety and depression, diabetes, lung cancer and bronchiectasis. The comorbid conditions may influence mortality and hospitalizations and need to be looked for as a routine and treated appropriately.

Additional Investigations: Chest X-ray, Lung Volumes and Diffusing Capacity, Oximetry and Arterial Blood Gases; and Alpha-1 Antitrypsin Deficiency Screening. Others include Exercise Testing (such as the 6 min walking test); Composite Scores (FEV1, exercise tolerance, weight loss and reduction in the arterial oxygen tension); identify patients at increased risk for mortality.

Therapeutic Options

Smoking cessation, Pharmacotherapy and nicotine replacement, regular physical activity, bronchodilator medications (beta 2-agonists anticholinergics, theophylline or combination therapy), prescribed on an as needed or on a regular basis to prevent symptoms. The choice of treatment is contingent up on the obtainability of medications and each patient's specific response in terms of symptom relief and side effects.

Appropriate pharmacologic therapy can decrease COPD symptoms lessen the incidence and severity of exacerbations and improve the health condition and exercise tolerance.

As per local guidelines the administration of influenza and pneumococcal vaccination is advisable.

All COPD patients profit from exercise training programs with enhancements in exercise tolerance and symptoms of dyspnea and fatigue.

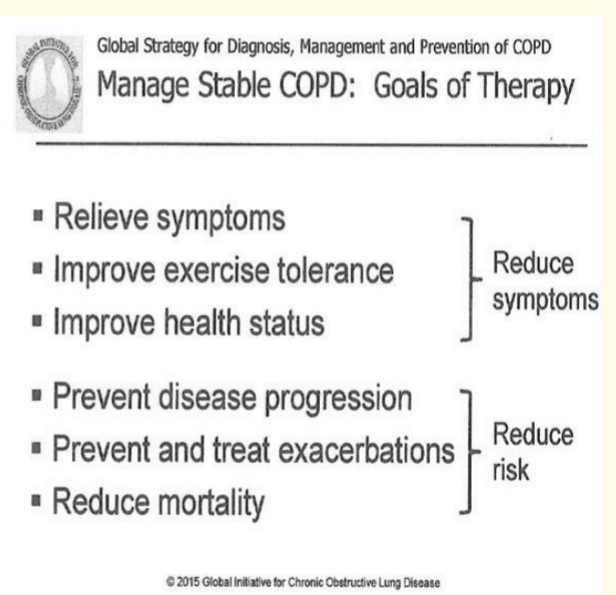

Figure 3.

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