Chronic obstructive airway disease (COPD), causes, symptoms, and treatment for patient education

COPD stands for chronic obstructive pulmonary disease. It is also sometimes called as chronic obstructive airway disease (COAD). This is primarily a lung disease in people who smoke for a long period of times but occasionally it may have a different cause.

Reasons for COPD:
The most common reason for development of COPD is **tobacco smoking**, either in the form of cigarettes (most common), huqa, sheesha or other **vaping methods/e-cigarettes**.

The other causes of COPD include passive smoking, especially if passive smokers share indoor space with smokers in a poor ventilated building over long periods of time. Indoor pollution which can be seen in our village where biomass fuel is used for cooking in small non ventilated kitchen spaces. Living in areas with high air pollution or persistent exposures to environmental/industrial dusts/fumes can also lead to development of COPD in small number of patients.

COPD may run in family. A small number of COPD patients may have **alpha-1 antitrypsin deficiency** related to genetic defect and these patients develop COPD even without any smoking exposure and at a younger age group. Patients with family history of COPD are certainly at increased risk of developing COPD.

Patients with other airway diseases like asthma can also develop COPD over a longer period, especially if their asthma is not under good control and there are also environmental/smoking exposure.

Manifestations of COPD:
COPD usually has two distinct features, chronic bronchitis, and emphysema. Both occurs in all patients of COPD though with variable ratio.

Chronic bronchitis is irreversible inflamed scarred airways which lead to persistent cough, productive of sputum, almost on daily basis, at least 3 months every year.

Emphysema is permanent damage to air-sacs or alveoli which forms the parenchyma/main gas transferring portions of the lung. You can consider emphysema as eaten out part of the lungs which occupy space in the lungs but do not transfer oxygen or carbon dioxide.

Asthma or reversible inflammation of the airways may be also found in patients with COPD patients, and it is important to diagnose this part as this is reversible and treatable. If left untreated, will lead to more irreversible damage and airflow obstruction.

Symptoms of COPD:
There can be variable symptoms of COPD. Chronic/long term cough is very common symptoms though patients does not seek advice regarding their cough as they almost always

attribute it as “smoker’s cough.” With times, these patients also develop daily sputum, wheezing, breathless on exertion initially and later on rest. They feel tired with reduced exercise capacity, and it is not uncommon for these patients to stop physical activity due to these symptoms, “to avoid symptoms.”

Patients with COPD can get “**lung attacks**” periodically which generally happens after viral or bacterial chest infections. These are called **acute exacerbations of COPD**. During these periods, their symptoms get exaggerated significantly and their oxygen level may drop, and blood carbon dioxide level may go up as they are unable to get rid of this toxic gas. This in turn will affect their cognitive function and can lead to coma. Patients with significant exacerbations need hospitalisation and these can be life threatening events.

Examination findings:
Patients with COPD may have higher pulse rate and breathing rate at rest and low oxygen saturations. When we listen to their lungs, breath sounds may be reduced and wheezing may be present. COPD can affect the heart and some patients develop heart failure causing leg swelling.

Investigations of COPD:
These patients may need simple general blood tests. Specific tests required are chest imaging and spirometry.

We normally perform a simple chest X-ray in patients with suspected or confirmed COPD. Sometimes, these patients may need CT scan of their lungs. Echocardiogram which assesses heart function may be required too.

Breathing test/ PFT:
There are various types of breathing tests and include simple spirometry, diffusion capacity of lungs and lung volumes.

Spirometry assesses the amount of air we can breathe in one breath. It is a simple test and can be performed easy in almost all patients with COPD. This test is a MUST for anyone with airways disease like asthma, COPD or bronchiectasis. You can think it as an ECG of the lungs. This can classify the COPD in mild, moderate, severe, and very severe disease categories.

Diffusion capacity requires special apparatus. It tells us how good your lungs can transfer oxygen from the air we inhale into the blood. This essentially grade the severity of lung damage/emphysema. It should be done at least once in all patients and periodically as needed.

Lung volume measurements is another breathing test in which primarily we measure how big or small your lungs are, how much air is left after breathing out which is called residual volume. High residual volume leads to more difficult breathing, and we may want to reduce it. Lung volume measurements should be measured at least once at time of diagnosis and sometimes we use it to monitor the response to treatment.
We may perform six-minute walk test in patients with severe and very severe COPD, to assess the need for oxygen and again to monitor response to the therapy.

Treatment of COPD:
Patient with COPD needs to **QUIT SMOKING**. This is to prevent further damage to the lungs and helps to recover some lung function. This is the most important step in the management of COPD.

Drug therapy:
We primarily use inhaler therapy which can be divided into two portions:

- **Preventers**, long-acting bronchodilators and sometimes has steroids in them
- **Relievers**, short and quick acting bronchodilator like Ventolin

These inhalers help to open airways by breaking the spasm. Inhaled steroids reduce the inflammation and reduce the risk of flare-ups or exacerbations in the long run. It is important to use these inhalers in the long run with good compliance.

There are a few types of oral medication which we may use in COPD patients, generally in severe disease. It is important to understand that inhalers provide better control of symptoms and cause least side effects as compared to oral medicines.

Treatment of exacerbations:
If patients get an exacerbation, it is important to treat these quickly and effectively to reduce further damage to the lungs. Once a pattern is known, we can give patients COPD **Action Plans** which guide patients how to treat these flare-ups at home to avoid admissions to hospital.

Non-Medicated therapy for COPD:
Physical therapy is an important aspect for management of COPD patients. Formal **Pulmonary Rehabilitation** is recommended in most patients with COPD. Daily aerobic exercises are important. Mucus clearing physical therapy are an important adjunct for the management in patient with significant mucus production.

Vaccines:
We advise all patients with COPD and lung issues to receive influenza vaccine (annual), pneumococcal vaccine, whooping cough vaccine and COVID-19 vaccine. It helps to reduce the risk of exacerbation and death related to these serious infections.

It is important to maintain a close relationship with your treating physician for better management and outcome of this serious illness.

If you are worried about possibility of having COPD or has COPD and needs to see a pulmonologist, you can contact our clinic which not only provides expert assessment of COPD but also perform breathing tests under one roof. We are equipped with most modern pulmonary function test laboratory.

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