Dental management in patients of Chronic Obstructive Lung Diseases

Dr. Shalini Dhiman¹, Dr. Jogender Kumar Jangra²

¹BDS (Consultant Dental Surgeon), Shri Ganesh Dental Clinic and Maxillofacial Centre Rohtak Haryana
²MDS (Oral & Maxillofacial Surgery), Consultant Oral Surgeon at Shri Ganesh Dental Clinic and Maxillofacial Centre Rohtak Haryana

ABSTRACT

The main purpose of this paper was to evaluate the dental status of a patient who is suffering from Chronic Obstructive Lung Diseases (COPD) like chronic bronchitis and Emphysema. These respiratory disorders can compromise the routine dental care and requires special treatment for the affected patients. These patients often visit the dental clinic. Therefore, dental professionals must provide correct dental care to these patients.

Key words: Dental management, COPD, Chronic bronchitis, Emphysema.

INTRODUCTION

The respiratory system is basically responsible for O2 and CO2 exchange between the blood and the external environment. This gas exchange takes place in lungs. Chronic Obstructive Lung Diseases is an irreversible and slowly progressing disorder characterized by a limitation of airway flow. It is a general term for pulmonary disorders characterized by chronic irreversible obstruction of airflow from the lungs.

Two most common diseases classified as Chronic Obstructive Lung Diseases (COPD) are chronic bronchitis and emphysema.

1. Chronic Bronchitis:

It is a condition associated with excessive tracheobronchial mucus production sufficient to cause cough with expectoration for at least 3 months of the year, for more than 2 consecutive years.

2. Emphysema

It is defined as distention of the air spaces distal to the terminal bronchioles because of destruction of alveolar walls.

DISCUSSION

Epidemiology of COPD includes 4th most leading cause of death, affects approximately 6% adults and more commonly males, second only do arthritis as the leading cause of long term disability and functional impairment. The most common etiologic factor is cigarette smoking. The risk of COPD is 8.8 times higher in male smokers and 5.9 times higher in female smoker compared with non-smokers.

Pathophysiology of Chronic Bronchitis consists of thickening of bronchial walls with inflammatory cell infiltrate, an increase in size of mucus glands and goblet cell hyperplasia. The obstruction is caused by narrowing of small airways, mucus plugging and collapse of peripheral airway, from the loss of surfactant. This obstruction occurs on inspiration and expiration.
Emphysema develops due to smoking which injures alveolar epithelium and cause a release of inflammatory mediators that attract activated neutrophils. The neutrophils release enzymes elastase that destroy alveolar walls, resulting in enlarged all space distal to terminal bronchioles and loss of elastic recoil of the lungs. This Obstruction occurs due to collapse of these unsupported and enlarged air spaces on expiration. But, No obstruction occurs on inspiration in emphysema.

Onset of COPD takes many years in most patients. Chronic bronchitis produce chronic cough with copious sputum production. Patient like sedentary life, over weight, cyanotic, edematous and breathless so called blue bloaters.

Emphysema patient exhibit severe exertional dyspnoea with minimal, non-productive cough, chest enlarged and become barrel shaped.

- Lose weight as disease progress.
- Cyanosis is usually not seen are called as pink puffers.
- Expiration is accompanied by patient pursuing their lips to forcibly remove air from their lungs and have audible wheezing during breathing.

**Laboratory Diagnosis includes:**

1. **Hallmark of COPD is reduced maximum expiratory flow rate forced expiratory volume in 1 sec (FEV₁) on spirometry is used to determine pulmonary function. Term COPD is used when patient have pulmonary symptoms and FEV₁ less than 70% of forced vital capacity in the absence of any other pulmonary disease. Term end stage COPD used when FEV₁/FVC is less than 50%.

2. Cough dyspnoea and sputum also seen so sputum culture should be done.

3. **Blood gas analysis:** Patient with chronic bronchitis have elevated PCO₂ and deserved PO₂ which leads to erythrocytosis and elevated hematocrit value and compensated respiratory acidosis. Total lung capacity is normal: Patient with emphysema have normal PCO₂ and decreased PO₂ and so normal Hb saturation and no erythrocytosis and normal hematocrit value.

4. **Chest radiographs:** In chronic bronchitis, there are increased broncho-vascular markings at the base of lungs while in emphysema, there is persistent and marked pleural distension of lungs, flattening of diaphragm and emphysematous bullae.

**Medical Management**

- No cure exists for COPD. But quality of life can be improved and progression of disease can by prevented
- Smoking cessation and elimination of exposure to environmental pollutants and irritant are important to limit the progression of disease
- Bronchodilators like methylxanthines (theophylline) and beta-adrenergic stimulants are given to relieve the symptoms
- Corticosteroids, anti-cholinergic and NSAIDS can be given.

**Dental Management**

1. Review history for evidence of any concurrent heart disease and appropriate precautions should be if heart disease present.
2. Any treatment should be avoided if upper respiratory infection present.
3. Always treat in upright position. Supine position should be avoided until we assure that patient can tolerate it.
4. Use local anesthetic: LA are as such not contraindication. But bilateral mandibular blocks and bilateral palatal blocks can cause airway constriction sensation in some patients.
5. Rubber dam should be avoided.
6. Pulse oximetry should be used to monitor O₂ saturation.
7. Low flow supplemental O₂ is given when O₂ saturation drops below 95% and it become necessary when it falls below 91%.
8. Nitrous oxide – oxygen inhalation sedation should be avoided because gas may accumulate in air spaces of diseased lung.
9. Barbiturates and narcotic should not be used because they have respiratory depressant properties.
10. Anticholinergic and antihistamines should not be used because of their drying properties which result in increase mucous viscosity.
11. Steroids supplements should be given if patient is already taking any steroids.
12. Afternoon appointment should be given so that clearance of secretion occur through airway
13. Erythromycin, macrolide antibiotics and ciprofloxacin should be avoided as they retarded the metabolism of theophylline causing theophylline toxicity.
14. General anesthesia should not used on outpatient.
15. Arterial blood gas monitoring should be carried out intra as well as post operatively.
16. Blood loss should be replaced by whole blood to avoid decrease in O₂ carrying capacity.
17. Fluid overload should be avoided.

CONCLUSION

The Chronic Obstructive Lung Diseases (COPD) can give rise to respiratory problems during dental procedures such as tooth extraction, periodontal surgeries etc. the dental professional must know these diseases in order to be able to provide effective and safe treatment and must able to recognize the oral and/or dental manifestations that might arise.

REFERENCES