International Journal of Advances in Medicine
Prasuna KR et al. Int J Adv Med. 2020 Mar;7(3):426-430
http://www.ijmedicine.com
pISSN 2349-3925 | eISSN 2349-3933
DOI: http://dx.doi.org/10.18203/2349-3933.ijam20200652

Original Research Article

Clinical profile of patients with chronic obstructive pulmonary disease at a tertiary care hospital

Prasuna K. R.[1], Praveena Korani Ratnam[2]*, Pramod Kumar K. R.[3], Krishna Kumar T. V. K.[4]

[1]Department of General Medicine, Melmaruvathur Adhiparasakthi Institute of Medical Sciences and Research, Melmaruvathur, Tamil Nadu, India
[2]Department of General Medicine, Sir Ronald Ross Institute of Tropical and Communicable Diseases, Nallakunta, Hyderabad, Telangana, India
[3]Department of General Medicine, Deccan College of Medical Sciences, Hyderabad, Telangana, India
[4]Department of General Medicine, Government Medical College, Nizamabad, Telangana, India

Received: 22 December 2019
Accepted: 24 January 2020

***Correspondence:**
Dr. Praveena Korani Ratnam,
E-mail: praveenakorani@yahoo.com

ABSTRACT

Background: Chronic obstructive pulmonary disease progresses if the exposure to aggravating factors continues. As lung function is declined, even after exposure is reduced or totally stopped, the COPD continues to progress though may be at a slower pace and as an effect of increasing age. Objective of the study was to study the clinical profile of patients with chronic obstructive pulmonary disease at a tertiary care hospital.
Methods: A hospital based cross sectional study was carried out among 30 patients as decided by inclusion and exclusion criteria at MediCiti Institute of Medical Sciences, Medchal from November 2012 to June 2014. Detailed history, detailed clinical examination, Systemic examination and Forced expiratory volume (FEV1) was done for all patients included. Pack years of smoking was calculated. Data was entered in Excel worksheet and analyzed using proportions.
Results: Maximum number of patients was in age group of 60-69 years (36.67%). Majority were males i.e. 83.34%. Smoking was major risk factor. Maximum number of patients (90%) had symptoms of less than one year of duration. Maximum number of patients (80%) had moderate to severe airflow obstruction at time of presentation and only 13.34% had mild disease. Four patients had mild form of the disease. Majority of patients with severe to very severe disease had more than 20 pack years. All patients in the study had breathlessness at the time of presentation. Wheeze and Crepitations were present in 96.66% of patients.
Conclusions: Smoking has been found to be the major risk factor and it was positively correlated with the severity of COPD.

Keywords: Chronic obstructive pulmonary disease, Clinical profile

INTRODUCTION

Chronic obstructive pulmonary disease is a disease which progresses if the exposure to the aggravating factors continues. As the lung function is declined, even after the exposure is reduced or totally stopped, the COPD continues to progress though may be at a slower pace and as an effect of increasing age. The affection of COPD depends upon factors like degree of limitation of the air flow, symptom severity, decreased capacity to exercise and the disease complications.[1]

The various risk factors of COPD are genetic i.e. there is deficiency of α-1 antitrypsin, the hyper responsiveness of the airway, lung growth during gestation, and probably female gender, exposure to tobacco smoke, Occupational dusts and chemicals, Indoor and outdoor air pollution, infections can also contribute to the increased severity of the COPD. It is also common in low social class people.[2]

There is inflammation of chronic nature from upper side to the lower side of the airways as well as the vasculature of the pulmonary in COPD. Mediators of the inflammation like macrophages etc. are seen in increased quantity in different parts of the lung. They damage the structure of the lung. There is also imbalance of the progeinases and anti progeinases.[1]

COPD pathological changes are seen in central part of the airways, peripheral parts of the airway and throughout. Surface epithelium is seen to be infiltrated by the inflammatory cells. There is an increase in the number of goblet cells which results in cough. Continuous damage and repair takes place. More repair results in more amount of scarring leading to the narrowing of the lumen and finally obstruction of the airway. Upper part of the lungs is commonly seen affected in COPD.[1]

There is hyper secretion of the mucous; there is dysfunction of the cilia, limitation of the airflow, hyperinflation of the pulmonary, cor pulmonale etc.[1]

Irreversible causes of the COPD are airway narrowing and fibrosis, destruction of the alveoli leading to loss of elastic recoil, alveolar support destruction. Reversible causes are contraction of smooth muscles of the airways, hyperinflation etc.[3] Air is trapped in COPD and there is hyperinflation of progressive nature. This leads to pushing of the diaphragm and makes it flattened leading to various adverse effects.[4]

Chronic cough with sputum are the main clinical features of mild COPD. Dyspnea affecting the daily life is seen in moderate COPD. Continuation of cough with sputum and worsening of dyspnea is seen in severe COPD along with more symptoms like wheeze, chest tightness.[1]

Present study was undertaken to study the Clinical profile of patients with chronic obstructive pulmonary disease at a tertiary care hospital.

METHODS

A hospital based cross sectional study was carried out among 30 eligible patients as decided by the inclusion and exclusion criteria guidelines laid down for the present study at MediCiti Institute of Medical Sciences, Medchal from November 2012 to June 2014.

Before the beginning of the study, study protocol was submitted to the scientific committee. After the scientific committee approval, the protocol was presented at Institution Ethics Committee. After approval from the Institution Ethics Committee we initiated the actual study. All patients were included as per the inclusion and exclusion criteria laid for the present study. Before including the eligible patient as per the inclusion and exclusion criteria, he or she was informed about the nature of the study. The study subject was ensured about the confidentiality and no harm during the study and data collection. After explaining all this, the study subject if willing was asked to fill up the informed consent form in the local language.

Detailed history like age, sex, history of smoking actively, history of exposure to passive smoking, history of exposure to biomass fuel pollution, duration of symptoms, detailed history pertaining to nature of cough, breathlessness, edema, fever if any etc. were enquired and recorded in the pre designed, pre tested, semi structured study questionnaire.

Detailed clinical examination pertaining to tachycardia, tachypnea, raised temperature, raised JVP, cyanosis, clubbing, and pedal edema etc. were enquired and recorded in the predesigned, pre tested, semi structured study questionnaire

Systemic examination was carried out pertaining to barrel shaped chest, decreased chest movements, hyper resonant notes, reduced breath sounds, wheeze, crepitations, hepatomegaly etc. were enquired and recorded in the predesigned, pretested, semi structured study questionnaire

Forced expiratory volume (FEV1) was done for all the patients included in the present study. The disease was classified as mild disease if FEV1 was more than eighty. The disease was classified as moderate disease if FEV1 was 50-79. The disease was classified as severe disease if FEV1 was 30-49. The disease was classified as very severe disease if FEV1 was less than thirty. Based on the history of smoking, pack years of smoking was calculated.

Statistical analysis

The data was entered in the Excel worksheet and analyzed using proportions. Appropriate statistical test was applied.

RESULTS

Table 1 shows sex and age distribution of the study subjects. Maximum number of patients was in the age group of 60-69 years (36.67%), followed by 70- 79 years (26.67%). Least number of patients was seen in the age group of 40-49 years (6.66%). Majority were males i.e. 83.34% and this may be due to the fact that males may be coming to this hospital more in number compared to females. There were no patients in the age group of 30-39 years. There were two patients in the age group of 40-49

years. There were six patients in the age group of 50-59 years. There were 11 patients in the age group of 60-69 years. There were eight patients in the age group of 70-79 years and there were three patients in the age group of more than 80 years.

Table 2 shows risk factors for COPD. Smoking was the major risk factor and 24 male patients were smokers and one patient was nonsmoker. History of exposure to smoke of burnt fuels was present in all the females and one nonsmoker male patient. No female was found to be smokers. Males were more exposed to smoking than females. But the exposure for the smoke of the burnt fuels was more in females compared to the males. This is naturally due to involvement of more females in cooking practices in county like India.

Table 1: Sex and age distribution of the study subjects.

Parameters		No. of cases	Percentage (%)
Sex	Male	25	83.34
	Female	5	16.66
	Total	30	100
Age (years)	30-39	-	0
	40-49	2	6.66
	50-59	6	20
	60-69	11	36.67
	70-79	8	26.67
	>=80	3	10
	Total	30	100

Table 2: Risk factors for COPD.

Risk factors	Male	Female	Total	Percentage (%)
History of smoking	24	-	24	80
Exposure to smoke of burnt fuels	1	5	6	20
Total	25	5	30	100

Table 3 shows duration of symptoms. Maximum number of patients (90%) had symptoms of less than one year of duration, and only 3 patients had symptoms for more than 1 year. 27 patients had symptoms since less than one year. Two patients had symptoms from one to five years. One patient had symptoms ranging from six to ten years. No patient had symptoms for more than ten years. This shows that COPD symptoms affect daily routine and hence patients are forced to see the doctor at earlier stages of the COPD.

Table 3: Duration of symptoms.

Duration of symptoms (yrs.)	No. of cases	Percentage (%)
<1	27	90
1 to 5	2	6.66
6 to 10	1	3.34
>10	-	-
Total	30	100

Table 4 shows severity of disease in the study subjects. Maximum number of patients (80%) had moderate to severe airflow obstruction at the time of presentation and only 13.34% had mild disease. Four patients had mild form of the disease. Twelve patients had moderate form of the disease. Twelve more patients had severe form of the disease and only two patients had very severe form of the disease. The disease was classified as mild disease if FEV1 was more than eighty. The disease was classified as moderate disease if FEV1 was 50-79. The disease was classified as severe disease if FEV1 was 30-49. The disease was classified as very severe disease if FEV1 was less than thirty.

Table 4: Severity of disease in the study subjects.

Degree	FEV1	No. of cases	Percentage (%)
Mild	>=80	4	13.34
Moderate	50-79	12	40.00
Severe	30-49	12	40.00
Very severe	<30	2	6.66
Total		30	100

Table 5 shows correlation of tobacco exposure with disease severity. Majority of the patients with severe to very severe disease had more than 20 pack years. There was only one patient with less than ten years of pack years of smoking and he was found to have moderate disease. There were three patients with 10-19 years of pack years of smoking and out of them one was having mild disease while two were having moderate disease. There were five patients with 20-29 pack years of smoking and out of them one was having mild disease, one was having moderate disease, two were having severe disease and one was having very severe disease. There were nine patients with 30-39 pack years of smoking and out of them one was having mild disease, four were having moderate disease and four were having severe disease. There were six patients with more than forty pack years of smoking and out of them one was having mild disease, two were having moderate disease and three were having severe disease.

Table 5: Correlation of tobacco exposure with disease severity.

Pack years	Mild		Moderate		Severe		Very severe		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
< 10	0	0	1	4.17	0	0	0	0	1	4.2
10-19	1	4.2	2	8.3	0	0	0	0	3	12.5
20-29	1	4.2	1	4.2	2	8.3	1	4.2	5	20.8
30-39	1	4.2	4	16.7	4	16.7	0	0	9	37.5
> 40	1	4.2	2	8.3	3	12.5	0	0	6	25
Total	4	16.7	10	41.7	9	37.5	1	4.2	24	100

Table 6 shows distribution of study subjects as per Symptoms and physical signs. All the patients in the study had breathlessness at the time of presentation. 73.33% had cough with expectoration and 53.33% had fever. The most common sign at presentation was Tachypnea (70%). 56.67% has clubbing, 40% had pedal edema. Raised temperature and JVP were seen in 33.34%. Twenty-two patients were having cough with sputum. Thirty patients were having breathlessness. Seven patients were having edema. Sixteen patients were having fever. Eight patients were having tachycardia. Twenty-one patients were having tachypnea. Ten patients were having raised temperature. Ten patients were having raised JVP. Six patients were having cyanosis. Seventeen patients were having clubbing and twelve patients were having pedal edema.

Table 6: Distribution of study subjects as per Symptoms and physical signs.

Clinical features		No. of cases	Percentage (%)
Symptom	Cough with sputum	22	73.33
	Breathlessness	30	100
	Edema	7	23.33
	Fever	16	53.33
Physical signs	Tachycardia	8	26.67
	Tachypnea	21	70.00
	Raised Temperature	10	33.34
	Raised JVP	10	33.34
	Cyanosis	6	20.00
	Clubbing	17	56.67
	Pedal edema	12	40.00

Table 7 shows systemic findings among the study subjects. Wheeze and Crepitations were present in 96.66% of patients. Barrel shaped chest and hyper resonant note were found in 70% of patients. Wheeze and Crepitations were seen in 96.66% of patients. Barrel shaped chest and hyper resonant note were seen in 70% of patients. Twenty-one patients were having barrel shaped chest. Thirteen patients were having decreased chest movements. Twenty one patients were having hyper resonant notes. Fourteen patients were having reduced breath sounds. Twenty-nine patients were having wheeze. Twenty-nine patients were having crepitations. Thirteen patients were having lour P2. Nine patients were having hepatomegaly.

Table 7: Systemic findings among the study subjects.

Systemic findings	No. of cases	Percentage (%)
Barrel shaped chest	21	70
Decreased chest movements	13	43.34
Hyper resonant notes	21	70
Reduced breath sounds	14	46.66
Wheeze	29	96.66
Crepitations	29	96.66
Loud P_2	13	43.34
Hepatomegaly	9	30

DISCUSSION

In the present study we found that males were more i.e. 83.34%. Agarwal RL et al, in their study found that 66.7% were males. Singh VK et al, in their study found that males were 94.6%. Lazovic B et al, also found that 70% of the study subjects were males in their study.[5-7]

The mean age was 64.03±10.71 years. Majority of the study subjects belonged to the age group of 60-69 years i.e. 67.74%. Agarwal RL et al, in their study found that the mean age of the study subjects was 37.8 years.[5] Rachaiah NM et al, in their study found that the mean age of the study subjects was 63.17 years.[8]

In the present study it was found that majority i.e. 24 were smokers while only 6 were non smokers. Rachaiah NM et al, in their study observed similar findings and reported that 44 out of 50 subjects were smokers.[8]

Majority of the patients (90%) were symptomatic for less than 5 years. Gupta S et al, observed from their study that the patients symptoms mean duration was 8.9±4.9 years.[9]

It was found that 40% were having moderate disease and another 40% had severe disease when we used the GOLD criteria for classification of the severity of the disease.

In the present study, majority of the patients had moderate COPD (40%) and severe COPD (40%) according to GOLD criteria. Gupta NK et al, observed in their study and found that 45% had mild disease. Rachaiah NM et al, in their study noticed that prevalence of sever disease was 42% and the prevalence of moderate disease was 50% and these findings are similar to the findings of the present study.[10,8]

It was observed that majority i.e. 80% were chronic smokers and the average pack years of smoking duration was 23.03 years. Rachaiah NM et al, in their study observed that 88% of their study subjects were chronic smokers.[8]

In the present study, all patients came with complaints of breathlessness to the hospital. Cough with sputum was the next common complaint, seen in 73.33% patients.

Rachaiah NM et al, in their study reported that breathlessness was seen in 94% of the cases while cough with sputum prevalence was 100%.[8] In the present study, tachypnea was seen in 70% of the cases. Gupta S et al, though found that all their patients i.e. 100% had tachypnea.[9]

The mean heart rate in the present study was recorded as 94.4 as compared to 96.14 per minute by Agarwal RL et al, and 86 per minute obtained by Calatayud JB et al.[5,11]

CONCLUSION

Forced expiratory volume in the first second is the most useful parameter to diagnose as well as assess the severity of the disease. Despite previous work on this subject in various studies since 1950, most internists and even specialists (including cardiologists or pulmonologists) are not aware about the practical utility of this relationship.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Global Initiative for Chronic Obstructive Lung Disease – Global Strategy for Diagnosis, Management, and Prevention of Chronic Obstructive Pulmonary disease. Available at: http.//www.goldcopd.com. Accessed 27 Nov 2013.
2. Murray CJ, Lopez AD. Evidence based health policy-lessons from global burden of disease study. Sci. 1996;274:740-3.
3. World health report. Geneva: world health organisation: 2000. Available at: www.who.int/whr/2000/en/statistics.com Accessed 27 Nov 2013.
4. Holtzman D, Aronow WS, Mellana WM, Sharma M, Mehta N, Lim J, et al. Electrocardiographic abnormalities in patients with severe versus mild or moderate chronic obstructive pulmonary disease followed in an academic outpatient pulmonary clinic. Ann Non invasive Electrocardiol. 2011;16(1):30-2.
5. Agarwal RL, Kumar D, Gurpreet, Agarwal DK, Chabra GS. Diagnostic values of electrocardiogram in chronic obstructive pulmonary disease. Lung India. 2008:78-81.
6. Singh VK, Jain SK. Effects of Airflow limitation on the electrocardiogram in COPD. Indian J Chest Dis Allied Sci. 1989;31(1):1-8.
7. Lazovic B, Zlatkovic M, Švenda V, Mazic S, Stajic Z, Đelic M. Electrocardiogram in chronic obstructive pulmonary disease Med Pregl. 2013;LXVI(3-4):126-9.
8. Rachaiah NM, Rachaiah JM, Krishnaswamy RB. A correlative study of spirometric parameters and ECG changes in patients with chronic obstructive pulmonary disease. Int J Biol Med Res. 2012;3(1):1322-6.
9. Gupta S, Khastgir T, Gupta MP, Sethi KK, Manoharan S. Clinical, Haemodynamic and Echocardiographic study in chronic cor pulmonale. J Assoc Physicians India. 1989;37(6):373-6.
10. Gupta NK, Agarwal RK, Srivastav AB, Ved ML. Echocardiographic evaluation of heart in chronic obstructive pulmonary disease patient and its correlation with severity of disease. Lung India. 2011:105-9.
11. Calatayud JB, Abad JM, Khoi NB, Stanbro WJ, Silver HM. P wave changes in pulmonary disease. Am Heart J. 1970;79:445-53.

Cite this article as: Prasuna KR, Ratnam PK, Kumar KRP, Kumar TVKK. Clinical profile of patients with chronic obstructive pulmonary disease at a tertiary care hospital. Int J Adv Med 2020;7:426-30.