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Original Research Article

A study of clinical profile of patients with chronic obstructive pulmonary disease

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ABSTRACT

Background: Chronic morbidity and also deaths are caused by COPD. Once affected by COPD, patients suffer many years together. Some can die before expected life expectancy. It has been estimated that due to constant exposure to risk factor and increased life expectancy, all over the world the prevalence is likely to increase. The objective of the study was to study the clinical profile of patients with chronic obstructive pulmonary disease.
Methods: A hospital based cross sectional study was conducted at department of community medicine, Late Baliram Kashyap Memorial Government Medical College, Jagdalpur, Chhattisgarh, India among patients with chronic obstructive pulmonary disease for a period of six months from September 2015 to February 2016. Informed consent was obtained from each patient. Detail clinical history, physical examination to look for nutritional status, spirometry with reversibility was carried out for each and every patient.
Results: Age range in our study was 26-75 years. Mean age in COPD patients was 57.13±11.149 years and that of control group was 54.60±13.074 years with male to female ratio 9.71:1 in COPD case and 11.5:1 in control group. Most common symptom in COPD patient was SOB followed by cough, expectoration, and edema and chest pain. mMRC grading in COPD are higher than control group in our study. Smoking in pack year was significantly higher in COPD cases as 69.70± 36.164 and in control group it was 13.84±7.867.
Conclusions: COPD was found to be more common in males. Cough was the most common presenting symptom. Smoking was significantly associated with occurrence of COPD.

Keywords: Symptoms, Chest pain, Smoking

INTRODUCTION

The characteristic feature of chronic obstructive pulmonary disease (COPD) is constant airflow limitation which is progressive. It is associated with an enhanced chronic inflammatory response in the airways. [1] COPD is a chronic respiratory disease characterized by a decline in lung function over time and accompanied by respiratory symptoms, primarily dyspnoea, cough, and sputum production. Exacerbations and co-morbidities contribute to the overall severity in individual patients.[1, 2] Consequently, COPD is associated with a significant economic burden, including hospitalization, work absence, and disability. All these aspects of COPD are a matter of great concern as the current data suggest that COPD mortality is increasing.[3, 4]

COPD is the fourth leading cause of death in the world.[5] It presents an important public health challenge, as they are both preventable and treatable.[1] Chronic morbidity and also deaths are caused by COPD. Once affected by COPD, patients suffer many years together. Some can die before expected life expectancy. It has been estimated that due to constant exposure to risk factor and increased life expectancy, all over the world the prevalence is likely to increase.[3, 4]

According to the ministry of health and family welfare, India has 17 million persons living with chronic obstructive pulmonary disease number that is estimated to rise to 22 million by 2016; it's good to remember here that there was time when COPD was relatively an unknown term.[6] One Indian study has reported that nearly 12 million Indians are affected by COPD, above the age of 30, with a prevalence rate of 5 % among male and 3% in women.[5] All available data indicate that COPD is often under diagnosed, detected very late and/or misdiagnosed as asthma.

In the today scenario if we see, COPD prevalence is on the rise and deaths due to COPD are increasing in alarming numbers worldwide. It is estimated that COPD will become the third-leading cause of death worldwide by 2020.[3]

The most important and common co-morbidity associated with COPD is cardiovascular disease. Other complications that are under diagnosed are osteoporosis, depression etc. COPD can also be associated with lung cancer and can be a major contributor to death in COPD patients.[1]

METHODS

A hospital based cross sectional study was conducted at Department of Community Medicine, Late Baliram Kashyap Memorial Government Medical College, Jagdalpur, Chhattisgarh, India among patients with chronic obstructive pulmonary disease for a period of six months from September 2015 to February 2016. Informed consent was obtained from each patient.

Inclusion criteria

Patients with known cases or newly diagnosed cases of chronic pulmonary obstructive disease and patients willing to give informed consent to participate in the study.

Exclusion criteria

Patients other than COPD, patients who are not willing to participate in the study, seriously ill, bed ridden patients.

Detail clinical history, Physical examination to look for nutritional status, Spirometry with reversibility was carried out for each and every patient. Patient's name, age, sex, race, marital status, occupation and address were recorded. Symptoms such as dyspnoea, cough, fever, sputum, hemoptysis, chest pain, and loss of appetite, loss of weight, dysphasia, and night sweat were recorded and analyzed. Past history of anti- tubercular treatment, any associated co-morbidity, any medication patient taking, patient any hormonal therapy, any congenital or acquired heart diseases, any history of allergy and any history of surgery in past. Personnel history had been taken as smoking habit, alcohol intake and any other exposure to smoke and dust and any other addiction. Family history of infertility, diabetes, systemic hypertension and heart diseases was taken. Menstrual history had been taken of age of menarche, last menstrual period, and age of menopause. General physical examination includes height, weight, body mass index, pulse, blood pressure, edema, pallor, icterus, peripheral lymphadenopathy, mid arm circumference, mid-thigh circumference, cyanosis, clubbing and any signs of malnutrition like Bitot's spot , koilonychias etc and thoroughly respiratory , abdominal, central nervous and cardiovascular examination had been done. Spirometry with reversibility is done using RMS software and classified COPD according to GOLD grading.

Statistical analysis

Data was entered and analyzed in Microsoft Excel Worksheet. Analysis was done using mean, standard deviation and proportions where appropriate. Students' t test was used to compare the difference in the mean. P value of less than 0.05 was considered significant.

RESULTS

Table 1 shows that mean age in case group (57.13 ± 11.149 years) was moderately higher than control group (54.60 ± 13.074 years). But there is no significant difference seen between COPD cases and control (p value =0.34).

Table 1: Age wise distribution of the COPD patients.

Age in years						
Group	**N**	**Mean**	**Standard deviation**	**Minimum**	**Maximum**	**P Value**
Cases	75	57.13	11.149	32	75	0.34
Control	25	54.60	13.074	26	75	
Total	100	56.50	11.643	26	75	

Table 2: Sex wise distribution of the COPD patients.

Sex	Cases		Control		Total
	N	**%**	**N**	**%**	**N**
Female	7	9.33	2	8	9
Male	68	90.67	23	92	91
Total	75	100.00	25	100	100

Table 3: Symptom wise distribution of the COPD patients.

	Cases		Control		Total	P Value
	NO	%	NO	%	NO	
SOB	75	100.00	15	60	90	<0.001
Cough	36	48.00	15	60	51	<0.001
Expectoration	20	26.00	3	12	23	0.003
Edema	13	17.33	3	12	16	0.75
Chest pain	2	2.67	5	20	7	0.013

Table 2 reveals the male dominancy of the disease. Male cases were 90.67% and female cases were 9.33%. Controls were matched in this respect.

The Table 3 represents that the symptoms of SOB was 100%, cough was 48%, expectoration was 26%, Edema was 17.33 % and chest pain was 2.67% where as in control groups SOB was 60 % , cough was 60 %, expectoration was 12 % edema was 17.33 % and chest pain was 2.67 %. Cough and expectoration and SOB are significant higher in the COPD cases as compared with the control group (p value <0.005).

Table 4 represents that the cases of COPD usually have grade III dyspnoea i.e. 50.67%, followed by grade II i.e. 33.33% of mMRC wise distribution in COPD cases whereas in control groups there are under 0 and 1 grade mMRC grading.

Table 4: mMRC grading of dyspnoea wise distribution of COPD patients.

	Cases		Control		Total
mMRC	**NO**	**%**	**NO**	**%**	**NO**
0	0	0.00	14	56	14
1	1	1.33	11	44	12
2	25	33.33	0	0	25
3	38	50.67	0	0	38
4	11	14.67	0	0	11
Total	75	100	25	100	100

Table 5: Duration of illness wise distribution of COPD patients.

Duration of illness in years				
Group	**N**	**Mean**	**Std. Deviation**	**P Value**
Cases	75	6.84	5.430	<0.001
Control	25	0.43	0.275	
Total	100	5.23	5.46	

Table 6: Smoking history in pack year wise distribution of COPD cases and controls.

Smoking history in pack/year				
Group	**N**	**Mean**	**Std. Deviation**	**P Value**
Cases	70	69.70	36.164	
Control	25	13.84	7.867	<0.001
Total	95	55.00	39.841	

Table 7: Spirometry wise distribution of the COPD cases and controls.

Variable	Group	N	Mean	Standard Deviation	P value
FEV1/FVC	**cases**	75	49.27	8.526	<0.001
	control	25	91.84	5.728	
FEV1 % predicted	**cases**	75	42.15	15.047	<0.001
	control	25	99.16	7.414	
FVC % predicted	**cases**	75	72.00	18.762	<0.001
	control	25	96.52	5.875	

Table 5 signifies that the duration of illness in COPD cases was 6.84 ± 5.43 years which was statistically significant higher as compared to the control group 0.43 ± 0.275 years (p value <0.001).

Table 6 shows that mean Pack-Years of smoking in COPD cases was 69.70± 36.164 and for controls was 13.84± 7.867 which is statistically significant (p value <0.001).

Spirometry parameter FEV1/FVC, FEV1 and FVC was statistically significant (p value <0.001) between cases and control groups as shown in Table 7.

DISCUSSION

Age range of the study patients was between 26 – 75 years. According to Curkendall et al COPD is common in older population and is highly prevalent in those aged more than 75 years. Approximately 9-10% prevalence of COPD was found in adults aged less than forty years. The males are affected more than females.[7] This study also indicates that majority of our patients were male (90%) with the mean age of 57.33 years. This observation agrees with the fact that COPD is common in males and is greater in older age groups. It was observed from the results of the current study that mean age of patients with COPD was 57.13±11.14 years in case group and 54±13.08 years in control group. A systematic review and meta-analysis of studies carried out in 28 countries between 1990 and 2004, and an additional study from Japan by Loveridge B et al provide stated that the prevalence of COPD was lower in non-smokers compared to smokers.[8] Another study in the Latin American Project showed COPD risk increases steeply with age, with the highest prevalence among those over 60 years.[9] In contrary to our study, a study from 1998–2009 showed that COPD prevalence was more in elder women of age 65-74 years as well as in elder men of 75-84 years.

As smoking is the main cause of COPD, the smoking habit and no. of pack years correlates with the disease severity in COPD patients. The likelihood of developing COPD increases with the total smoke exposure.[10] In our study pack years had a statistically significant difference between cases and controls. The mean value of pack years was 69.74±36.16 in the case group while it was 13.84±7.86 in the control group. This difference was statically significant (P value <0.001). Our study matched with a study by Pirrozi et al in 2012 who reported that exposure to personal smoke and second hand smoke increases the risk and frequent exacerbations. [11] On the contrary in a study done by Seyed et al in 2012 they observed no significant difference with respect to smoking habits.[12]

In our study statistically significant difference (p= <0.001) was observed between COPD case and control group on basis of duration of illness in years. In cases it was 6.8±5.43 years and control group it is 0.43±0.27 in years. In the study done by Gupta et al, the mean duration of symptoms was 8.8±4.8 years. Thus duration of illness is much higher in COPD patient as compare to control groups.[13]

All the 75 cases of COPD had dyspnoea. Majority of them (50.67 %) had grade 3 dyspnoea according to mMRC scale and 33.33% of cases were dyspnoea at rest (grade 4), 14 % had grade 2 dyspnoea, 1.33 % had grade 1 dyspnoea whereas in control group 56 % had grade 1 and 44 % had grade 2 dyspnoea. This was found to be highly significant when compared with control group (P value <0.001). This was in contrast to lower dyspnoea reported by de Torres (grade 0-1 MMRC) in western population with COPD.[14] This reflects the delay in seeking medical attention in Indian patients. More over majority of these patients tend to be smokers and usually ignore the cough which runs for years which is the second most common symptom in COPD cases which is 48 % in our study. The most common symptom that make patient to go to the doctor is breathlessness. According to GOLD guidelines patients usually experience worsening dyspnoea when their FEV_1 falls below 50% of predicted.[1]

In our study spirometry shows significant difference between the cases and control groups. It was observed from the results of the current study that mean of FEV_1% predicted , FVC % predicted and FEV_1/FVC ratio in patients with COPD was 42.15±15.04 %, 72.0±18.76 % and 49.27±8.52 % in case group as compared to 99.16±7.41%, 96.52±5.87 % and 91.84±5.72 % in control group subsequently. There is statistical significant difference between the severities of disease (p value <0.001). In obstructive lung disease, the FEV_1 is reduced because of obstacle to escape of air from lungs. This will lead to reduced FEV1/FVC ratio.[15]

CONCLUSION

COPD was more common in older individuals. It was more common in males compared to females. Smoking was the most major risk factor for COPD.

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