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Research Article

Atrial Fibrillation in Chronic Obstructive Pulmonary Disease

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ABSTRACT;

Objective; To determine the frequency of atrial fibrillation in cases of Chronic Obstructive Pulmonary Disease.

Material and methods; This was a cross sectional study and was done at Department of Pulmonology, Services Hospital, Lahore from July to December 2017. In this study, the cases of both gender with age range 30 to 70 years were included. COPD was labelled according to COPD GOLD guidelines 2017. The cases with COPD of at least one year irrespective of its etiology were included. The case with already suffering from ischemic heart disease, having any valvular lesion and electrolyte imbalance were excluded. Then these cases underwent ECG and atrial fibrillation was labelled by the absence of t wave and irregular R-R interval on standard 12 lead ECG.

Results; In this study, there were 100 cases of COPD with mean age was 61.34±8.23 years. There were 78 (78%) males and 22 (22%) females. There were 40 (40%) hypertensive and 29 (29%) diabetic cases in present study. Atrial fibrillation was noted in 18 (18%) of cases with COPD. There was no significant difference in terms of age groups in COPD with p= 0.76. A fib was significantly high both in cases DM and HTN where it was seen in 6 (20.69%) of cases and 10 (25%) of cases out of their respective groups with p values of 0.05 and 0.001.

Conclusion;Atrial fibrillation is not that uncommon arrhythmia detected in COPD cases and is significantly high in cases with DM and HTN.

Key words; COPD, Atrial fibrillation

INTRODUCTION;

Chronic obstructive pulmonary disease (COPD) is one of the most common, obstructive lung disease, whose incidence is on the rise for decades and is virtually a preventable and controllable disease. Its incidence is markedly increased in the past twenty years especially in the developing countries courtesy increasing smoking trends and higher degree of pollution.[1]

COPD is the amongst the most common causes of high degree of morbidity globally and is ranked as the 5th leading cause of mortality throughout the world and this rate is though to increased to 3rd position by 2030.[2-3]

The major etiologic factors include smoking, pollution, alpha 1 anti trypsin deficiency and few other genetic predispositions. Shortness of breath and cough are the salient signs and symptoms.[4-5]COPD can lead to various respiratory or cardiac complications that can further add to over all morbidity and can increase not only the morbidity but also lead to higher chances of mortality. Cardiac arrhythmia especially atrial fibrillation is one of the most common type observed.[8]The basis underlying pathophysiology is not clear, hypoxia, dilated right chambers of the heart are the key components; however the management is the same as that of atrial fibrillation without COPD.[9]

Objective; To determine the frequency of atrial fibrillation in cases of Chronic Obstructive Pulmonary Disease.

METHODOLOGY:

Study settings; Cross sectional study.

Study site; Department of Pulmonology, Services Hospital, Lahore

Study time; July 2017 to December 2017

Sampling technique; Non probability-consecutive sampling

In this cross sectional study, the cases of both gender with age range 30 to 70 years were included. COPD was labelled according to COPD GOLD guidelines 2017. The cases with COPD of at least one year irrespective of its etiology were included. The case with already suffering from ischemic heart disease, having any valvular lesion and electrolyte imbalance were excluded. Then these cases underwent ECG and atrial fibrillation was labelled by the absence of t wave and irregular R-R interval on standard 12 lead ECG.

Statistical analysis;

The data was entered and analysed by using SPSS version-23. Post stratification chi square test was applied taking p value < 0.05 as significant.

RESULTS;

In this study, there were 100 cases of COPD with mean age was 61.34±8.23 years. There were 78 (78%) males and 22 (22%) females. There were 40 (40%) hypertensive and 29 (29%) diabetic cases in present study. Atrial fibrillation was noted in 18 (18%) of cases with COPD (figure 1).There was no significant difference in terms of age groups in COPD with p= 0.76. A fib was significantly high both in cases DM and HTN where it was seen in 6 (20.69%) of cases and 10 (25%) of cases out of their respective groups with p values of 0.05 and 0.001 as shown in table 01.

Figure 01. Atrial Fibrillation in COPD

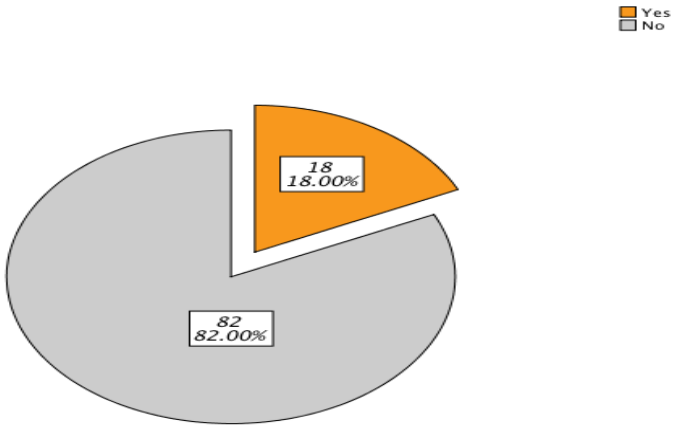

Table 01. Atrial fibrillation vs variables in study subjects

Atrial fibrillation	**Age groups (years)**		**Total**	***P Value***
	30-50	**51-70**		
Yes	6 (13.33%)	10 (18.18%)	16 (16%)	0.76
No	39 (86.67%)	45 (81.82%)	84 (84%)	
	Diabetes Mellitus		**Total**	***P Value***
	Yes	**No**		
Yes	06 (20.69%)	10 (14.08%)	16 (16%)	0.05
No	23 (79.31%)	61 (85.92%)	84 (84%)	
	Hypertension		**Total**	***P Value***
	Yes	**No**		
Yes	10 (25%)	6 (10%)	16 (16%)	0.001
No	30 (75%)	54 (90%)	84 (84%)	

DISCUSSION;

COPD is one of the highly morbid conditions in the pulmonary diseases and the symptomatology can get even worse where the arrhythmias are developed; and it can be fatal as well. Almost all types of arrhythmias are observed in COPD; however, atrial fibrillation is the 2nd common after premature ventricular contractions and is seen in 23% of the cases with COPD followed by VT seen in 13% of the cases. Atrial fibrillation was observed in 16 (16%) of the cases of COPD in the present study. These results were close the findings of the previous studies as well where this was observed in less than 20% of the cases and two studies with almost similar inclusion criteria had similar results to the present study.Camm AJ et al Sidney S et al observed this in 10% and 15% of their studies respectively in cases of COPD.[10-11] A fib was significantly high both in cases DM and HTN where it was seen in 6 (20.69%) of cases and 10 (25%) of cases out of their respective groups with p values of 0.05 and 0.001. These results also were observed in the past where both of these confounder revealed higher incidence rate of atrial fibrillation and few of these studies revealed significant (p values less than 0.05)[12-14] and the others non significantassociation with this.[15-16] This can be explained by the various factors as both of these are independent risk factor for an underlying atherosclerosis and also by many other pathophysiologic ways to lead to cardiac disease. Moreoverboth of these also lead to boththe systolic and diastolic dysfunction of the heart irrespective of the coronary artery disease, which can further potentiate the risk of arrhythmia as was seen in the present study.

CONCLUSION;

Atrial fibrillation is not that uncommon arrhythmia detected in COPD cases and is significantly high in cases with DM and HTN.

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