

Prevalence of Atrial Fibrillation in COPD Patients of Rahimyar Khan

FARUKH SHAHZAD¹, KHALIL ASRAR², FARUKH SALMAN³

ABSTRACT

Aim: To determine the prevalence of atrial fibrillation in cases of COPD patients of Distt. R Y Khan.

Study Design: Observational Cross Sectional Study

Place of Study and duration of study: Study was designed in the department Medicine of Sheikh Zayed Hospital, Rahim Yar Khan and duration of study was seven months.

Methods: Patients were selected by the help of a consultant physician with the use of a standardized form which was developed for this present study. Inclusion criteria of the study were both genders either male or female of age more than 40 years and have history of COPD. The cases were labelled as COPD according to GOLD 2015 guidelines. Atrial fibrillation was labelled as yes on the basis of absent p wave and irregular heart rate.

Results: In the present study, there were total 100 cases of COPD out of which 82(82%) were males and 18(8%) females. The mean age was 56.45±7.23 years. There were 58(58%) cases that had COPD for more than 5 years and 68(68%) of cases had class IV of COPD. Atrial fibrillation was seen in 18(18%) of the cases. Atrial fibrillation was seen in 13(22.41%) out of 58 cases that had COPD more than 5 years with $p= 0.02$. There was no significant difference in terms of severity of COPD where it was seen in 5(15.62%) cases with class III and 13(19.12%) cases of class IV out of their respective groups with $p= 0.43$.

Conclusion: Atrial fibrillation is not uncommon complication of COPD and it is significantly associated with duration of COPD more than 5 years.

Keywords: COPD, Atrial fibrillation

INTRODUCTION

Chronic obstructive pulmonary disease (COPD) is one of the rising concerns in the health departments as the number of smokers and pollutions is on the rise. The risk factors of COPD are same that can lead to cardiac disease and atrial fibrillation is one of the salient ones.

Chronic obstructive pulmonary disease (COPD) is a communal, avoidable and remediable disease that is characterized by persistent respiratory symptoms and airflow limitation that is due to airway and/or alveolar abnormalities usually caused by significant exposure to noxious particles or gases¹.

COPD is a chronic debilitating disease that can increase the morbidity and mortality worldwide. Its number is highest in the developing countries. Various risk factors can predispose to this condition. Tobacco exposure is the most common one, followed by biomass fuel burning and indoor and outdoor pollution. The rate of smoking as well as pollution is rising and so are the cases of COPD, which is thought to be the 3rd leading causes of death in next 20 years^{2,3}.

The risk factors for COPD are also similar to that of ischemic heart disease and predispose to the cardiac disorders. Moreover, the dilated heart due to cor pulmonale also serves as a source to predispose for different arrhythmias like Atrial fibrillation.³ Higher age, smoking habits, co morbid hypertension, diabetes mellitus are major risk factors for COPD as well as different arrhythmias^{4,5}.

Quality of life is impaired in presence of comorbid conditions even in early stages of COPD⁶. Comorbid conditions may coexist with COPD as independent entity or it may have same risk factors/pathology as that of COPD. Such patients require multiple therapeutic interventional approach^{7,8,9}.

MATERIALS AND METHODS

This Study was premeditated in the department of Medicine Sheikh Zayed hospital, Rahim Yar Khan. Data were collected during the period from January 2016 to July 2016. Sampling technique was Non-probability consecutive sampling. Patients were selected by the help of a consultant physician with the use of a standardized form which was developed for this present study. Inclusion criteria of the study were both genders either male or female of age more

¹Lecturer Biochemistry, Avicenna Medical College, Lahore.

^{2,3}MO RHC Kotseemaba Rahim yar Khan.

Correspondence to Dr. Farukh Shahzad, Email: drfarukh.salman@gmail.com

than 40 years and have history of COPD. COPD Patients were selected by the help of consultant physician and diagnosed on the basis of GOLD guidelines 2015 of severity III and IV presenting to in patient departments were included. Exclusion criteria any history of liver and cardiac disease. The patients with electrolyte imbalance were also excluded from the study. The detailed socio demographic and clinical data was collected. Atrial fibrillation was diagnosed by the consultant physician symptomatically and by the help of ECG and labelled as yes when the p wave was absent and the R-R interval was variable. The data was entered and analysed using SPSS 21 version. Post stratification chi square test was applied taking p value < 0.05 as significant.

Table: Atrial fibrillation vs study variables (n= 100)

Duration of COPD	Atrial Fibrillation		Total	P Value
	Yes	No		
< 5 years	05 (11.90%)	37 (88.10%)	42 (42%)	0.02
> 5 years	13 (22.41%)	45 (77.59%)	58 (58%)	
Class of COPD				
III	5 (15.62%)	27 (84.38%)	32 (32%)	0.43
IV	13 (19.12%)	55 (80.88%)	68 (68%)	

DISCUSSION

COPD is among the top 5 leading causes of death globally and it is considered to the 3rd leading cause of death by 2030. Multiple co morbid conditions can accelerate the severity and clinical spectrum of COPD and Atrial fibrillation in one of the salient ones.

In the present study, in cases of COPD, the atrial fibrillation was observed in 18 (18%) of the cases. This was also similar to the data in the previous studies where its prevalence has been seen in the range of 11-15% of the cases of COPD^{10,11}.

The rate of atrial fibrillation was significantly high in cases that had duration of COPD for more than 5 years where it was seen in 13(22.41%) out of 58 cases that had COPD more than 5 years with p= 0.02. This was also reinforced by the other studies. According to study done by Huang B et al and Li J et al, both revealed significantly high number of this complication; however the cut off values in their study were slightly different.¹²⁻¹³ The latter study has shown as high as 30% of the cases to suffer from this. The reason of this high number can be explained by the fact that the chronic is the disease and higher are the chances to not only develop cor pulmonale due to stress over the right side of the heart, but also hypoxia and the increased risk of cardiovascular disease due to sharing of the common risk factors, that pose such cases to develop various arrhythmias including atrial fibrillation.

RESULTS

In the present study, there were total 100 cases of COPD out of which 82 (82%) were males and 18(8%) females. The mean age was 56.45±7.23 years. There were 58 (58%) cases that had COPD for more than 5 years and 68 (68%) of cases had class IV of COPD. Atrial fibrillation was seen in 18(18%) of the cases. Atrial fibrillation was seen in 13(22.41%) out of 58 cases that had COPD more than 5 years with p=0.02. There was no significant difference in terms of severity of COPD where it was seen in 5 (15.62%) cases with class III and 13(19.12%) cases of class IV out of their respective groups with p= 0.43 as shown in the table.

There was no significant difference in terms of severity of COPD where it was seen in 5(15.62%) cases with class III and 13(19.12%) cases of class IV out of their respective groups with p= 0.43. In the past not much work is done in such context to look for this aspect. However, the studies have shown that the severe disease has high chances to develop this.¹⁴⁻¹⁵ The lack of significant difference in such cases may be due to the inclusion criteria as we included the cases of in patient that had admission with an acute exacerbation, which might show the more severe form than their baseline. So, the base line disease has not posed a great risk to develop this complication.

CONCLUSION

Atrial fibrillation is not uncommon complication of COPD and it is significantly associated with duration of COPD more than 5 years.

REFERENCES

1. Global Initiative for Chronic Obstructive Lung Disease. Global strategy for the diagnosis, management and prevention of chronic obstructive pulmonary disease. Revised 2014. Available from: <http://www.goldcopd.org/guidelines-global-strategy-for-diagnosis-management.html>. Accessed March 20, 2017.
2. Rabe KF, Hurd S, Anzueto A, et al. Global strategy for the diagnosis, management and prevention of chronic obstructive pulmonary disease: GOLD executive

- summary. *Am J Respir Crit Care Med.* 2007;176(6):532–555.
- World Health Organization. Chronic obstructive pulmonary disease (COPD). 2011. Available from: <http://www.who.int/respiratory/copd> <http://www.who.int/respiratory/copd>. Accessed March 20, 2017.
 - Chatila WM, Thomashow BM, Minai OA, Criner GJ, Make BJ. Comorbidities in chronic obstructive pulmonary disease. *Proc Am Thorac Soc.* 2008;5(4):549–555.
 - Tsiligianni IG, Kosmas E, Van der Molen T, Tzanakis N. Managing comorbidity in COPD: a difficult task. *Curr Drug Targets.* 2013;14(2): 158–176.
 - Koskela J, Kilpeläinen M, Kupiainen H, et al. Comorbidities are the key nominators of the health related quality of life in mild and moderate COPD. *BMC Pulm Med.* 2014;14(1):102-05.
 - Valderas JM, Starfield B, Sibbald B, Salisbury C, Roland M. Defining comorbidity: implications for understanding health and health services. *Ann Fam Med.* 2009;7(4):357–36.
 - Bower P, Macdonald W, Harkness E, et al. Multiborbidity, service organization and clinical decision making in primary care: a qualitative study. *Fam Pract.* 2011;28(5):579–587.
 - Divo M, Cote C, de Torres JP, et al. Comorbidities and risk of mortality in patients with chronic obstructive pulmonary disease. *Am J Respir Crit Care Med.* 2012;186(2):155–161.
 - Camm AJ, Kirchhof P, Lip GY, Schotten U, Savelieva I, Ernst S, et al; European Heart Rhythm Association; European Association for Cardio-Thoracic Surgery Guidelines for the management of atrial fibrillation: The Task Force for the Management of Atrial Fibrillation of the European Society of Cardiology (ESC). *Eur Heart J.* 2010;31(19):2369-429. Erratum in: *Eur Heart J.* 2011;32(9):1172.
 - Sidney S, Sorel M, Quesenberry CP Jr, DeLuise C, Lanes S, Eisner MD. COPD and incident cardiovascular disease hospitalizations and mortality: Kaiser Permanente Medical Care Program. *Chest.* 2005;128(4):2068-75.
 - Li J, Agarwal SK, Alonso A, Blecker S, Chamberlain AM, London SJ, et al. Airflow obstruction, lung function, and incidence of atrial fibrillation: the Atherosclerosis Risk in Communities (ARIC) study. *Circulation.* 2014; 129(9): 971-80.
 - Huang B, Yang Y. Radiofrequency catheter ablation of atrial fibrillation in patients with chronic obstructive pulmonary disease: opportunity and challenge: response to Dr Kumar's comment. *J Am Med Dir Assoc.* 2015;16(1):83-4.
 - Caglar IM, Dasli T, TurhanCaglar FN, Teber MK, Ugurlucan M, Ozmen G. Evaluation of atrial conduction features with tissue Doppler imaging in patients with chronic obstructive pulmonary disease. *Clin Res Cardiol.* 2012;101(8):599-606.
 - Steer J, Gibson J, Bourke SC. The DECAF Score: predicting hospital mortality in exacerbations of chronic obstructive pulmonary disease. *Thorax.* 2012;67(11):970-6.