International Journal of Advanced Biotechnology and Research (IJBR)
ISSN 0976-2612, Online ISSN 2278–599X,
Vol-9, Issue-2, 2018, pp885-888
http://www.bipublication.com

Research Article

Frequency of Atrial Arrhythmias (Which include trial Fibrillation, Atrial Flutter, and Multifocal Atrial Tachycardia) in the Patients who were suffering from COPD.

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ABSTRACT

Objectives:evaluate the frequency of atrial arrhythmias (which include atrial fibrillation, atrial flutter, and multifocal atrial tachycardia) in the patients who were suffering from COPD.

Methodology: Two hundred and forty patients of having chronic obstructive pulmonary disease fulfilling the inclusion and exclusion criteria were selected in the Department of Medicine, THQ Hospital, Chunian, DistrictKasur. Informed consent was taken from guardian of patients and was explained that the data was used and published but confidentiality was also maintained. Demographic profile was recorded including age, gender and address. All data was recorded on structured Performa. To observe the presence or absence of p-waves, irregular rhythm, regular rhythm, irregular PP interval and Saw-tooth pattern of atrial activity in lead II, III and AVF we drew Electrocardiogram (ECG) by electrocardiographic machine. Outcome variable was recorded.

Results: In our study, 46.25%(n=111) were between 40-55 years of age while 53.75%(n=129) were between 56-70 years of age, mean+sd was calculated as 56.23+8.19 years, 55.83%(n=134) were male and 44.17%(n=106) were females, 59.17%(n=142) between 1-2 years and 40.83%(n=98) had >2 years of duration. Frequency of atrial arrhythmias in the patients who were suffering from COPD was recorded as 9.17%(n=22) having Atrial Fibrillation, 22.08%(n=53) had Atrial flutter and 12.92%(n=31) had Multifocal atrial tachycardia.

Conclusion: We concluded that the frequency of atrial arrhythmias is high among patients with COPD. So, it is recommended that every patient who present with COPD, should be sort out for atrial arrhythmias. However, it is also required that every setup should have their surveillance in order to know the frequency of the problem.

Keywords: Chronic obstructive pulmonary disease, atrial arrhythmias, frequency

INTRODUCTION

Chronic obstructive pulmonary disease COPD state characterize by the presence of airflow obstruction due to chronic bronchitis or emphysema. It is estimated that 14 million of Americans have been diagnosed with COPD. The most important cause of COPD is smoking.[1] Chronic obstructive pulmonary disease is a global health issue, with cigarette smoking being an important risk factor universally. Global Burden of Disease and Risk Factors project organized by WHO in 2001 show that COPD was the fifth leading cause of death.[6] The main complications of COPD which include atrial fibrillation AF, atrial flutter AFL and multifocal atrial tachycardia

MAT, these are the most common atrial arrhythmias in patients suffering from chronic obstructive disease. Atrial flutter is less common than atrial fibrillation. AFL and MAT mostly occur in patients with the history of COPD.[1-3] Existing literature shows that the prevalence of atrial fibrillation (AF) in the UK is more than 12/1000, increasing to over 100/1000 in people aged 85 years and over.[7]

Existing literature showed that a high proportion (which is 40%) of patients were observed to have multifocal atrial tachycardia before the treatment in large cohort study of COPD's patients with no or stable cardiac co-morbidities.[5] Previous study showed that the 20 percent patients with heart failure were suffering from COPD significantly with p<.001. This result showed that COPD is the cause for heart failure.[4] The prevalence of atrial flutter AFL in a survey in United States, it was estimated that 0.07million people were patients of AFL in 2005.[8] It was reported that the incident of multifocal atrial tachycardia with a range from 2.5% to 20%.[9] Previous study shows that the percentage of atrial fibrillation AF with the history of chronic obstructive pulmonary disease was 12% and the percentage of atrial flutter AFL was 25% having p=0.006. It showed that patients with AFL were more likely to have COPD.[2] It is noticed that 21.7% patients were diagnosed atrial fibrillation also suffering from COPD with p=0.001.3 It was observed that the proportion of multifocal atrial tachycardia was ranged from 27% to 32% with p=0.70.[5]

The purpose of the study is to determine the frequency of atrial arrhythmias (atrial fibrillation, atrial flutter, and multifocal atrial tachycardia) in the patients who were suffering from chronic obstructive pulmonary disease. There is no local data available for this topic more over there is regional difference of the prevalence of disease so the results will be different in our local population.

METHODOLOGY

A total of 240 COPD cases having age more than 40-70 years, both male and female having the history of COPD >one year duration were included and those who were on regular treatment, and smoking cigarette for more than 10 years were included in the study whereas those with the history of Ischemic heart disease, it was assessed by Electrocardiogram (ECG) with no ST segment changes, exposure to occupational dusts and chemicals, having any history of employment in chemical factories, having no history of diabetes mellitus (it was determined by blood sugar fasting BSF<100mg/dl and blood sugar random BSR<140mg/dl), hypertension (BP<120/80) and those not previously using diuretics and no electrolytes imbalance (sodium 135-147mEq/Land potassium 3.5-5.2mEq/L) were excluded from the study. Informed consent was taken from guardian of patients and was explained that the data was used and published but confidentiality was also maintained. Demographic profile was recorded including age, gender and address. All data was recorded on structured Performa. To observe the presence or absence of p-waves, irregular rhythm, regular rhythm, irregular PP interval and Saw-tooth pattern of atrial activity in lead II, III and AVF we drew Electrocardiogram (ECG) by electrocardiographic machine. Outcome variable was recorded.

RESULTS

Age distribution of the patients was done which shows that 46.25%(n=111) were between 40-55 years of age while 53.75%(n=129) were between 56-70 years of age, mean$\pm$sd was calculated as 56.23$\pm$8.19 years. (Table No.1)

Gender distribution of the patients was done which shows that 55.83%(n=134) were male and 44.17%(n=106) were females. (Table No. 2)

Frequency of duration of disease was recorded as 59.17%(n=142) between 1-2 years and 40.83%(n=98) had >2 years of duration. (Table No. 3)

Frequency of atrial arrhythmias in the patients who were suffering from COPD was recorded as 9.17%(n=22) having Atrial Fibrillation, 22.08%(n=53) had Atrial flutter and

12.92%(n=31) had Multifocal atrial tachycardia. (Table No. 4)

Table No. 1 Age Distribution (N=240)

Age(in years)	No. of patients	%
40-55	111	46.25
56-70	129	53.75
Total	240	100
mean±sd	56.23±8.19	

Table No. 2 Gender Distribution (N=240)

Gender	No. of patients	%
Male	134	55.83
Female	106	44.17
Total	240	100

Table No. 3 Frequency Of Duration Of Disease (N=240)

Duration of disease (in years)	No. of patients	%
1-2	142	59.17
>2	98	40.83
Total	240	100

Table No. 4 Frequency Of Atrial Arrhythmias In The Patients Who Were Suffering From Copd (N=240)

Atrial Arrhythmias	No. of patients	%
Atrial Fibrillation	22	9.17
Atrial flutter	53	22.08
Multifocal atrial tachycardia	31	12.92

DISCUSSION:

We planned this study to determine the frequency of atrial arrhythmias (atrial fibrillation, atrial flutter, and multifocal atrial tachycardia) in the patients who were suffering from chronic obstructive pulmonary disease considering the fact that there is no local data available for this topic more over there is regional difference of the prevalence of disease so the results may be different in our local population.

In our study, 46.25%(n=111) were between 40-55 years of age while 53.75%(n=129) were between 56-70 years of age, mean±sd was calculated as 56.23+8.19 years, 55.83%(n=134) were male and 44.17%(n=106) were females, 59.17%(n=142) between 1-2 years and 40.83%(n=98) had >2 years of duration. Frequency of atrial arrhythmias in the patients who were suffering from COPD was recorded as 9.17%(n=22) having Atrial Fibrillation, 22.08%(n=53) had Atrial flutter and 12.92%(n=31) had Multifocal atrial tachycardia.

The findings of our study are in agreement with Pappone C[9] reported that the incident of multifocal atrial tachycardia with a range from 2.5% to 20%.[9] Another previous study shows that the percentage of atrial fibrillation AF with the history of chronic obstructive pulmonary disease was 12% and the percentage of atrial flutter AFL was 25% having p=0.006. It showed that patients with AFL were more likely to have COPD.[2]

It is noticed that 21.7% patients were diagnosed atrial fibrillation also suffering from COPD with p=0.001.3 It was observed that the proportion of multifocal atrial tachycardia was ranged from 27% to 32% with p=0.70,[5] these findings are higher than the results of our study, which may be due to regional differences.

Epidemiological studies have shown that patients with COPD and asthma treated with oral steroids were at an increased risk of developing AF even after controlling for a few factors of disease severity.[10] van der Hooft et al[11] also found a higher incidence of AF among patients requiring high dose oral steroids regardless of the etiology. One mechanism by which steroids facilitate arrhythmogenesis is via a direct effect on the cell membrane causing potassium efflux from cells.[12] Theophylline has also been shown to be associated with AF among patients with COPD, interestingly even with normal serum levels.[13]

However, in light of the above studies and our findings Atrial Fibrillation was the most common atrial arrhythmia in patients with COPD, but our data in local setup is primary and needs some other studies to be conducted to authenticate our findings.

CONCLUSION:

We concluded that the frequency of atrial arrhythmias is high among patients with COPD. So, it is recommended that every patient who present with COPD, should be sort out for atrial arrhythmias. However, it is also required that every setup should have their surveillance in order to know the frequency of the problem.

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