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Original Research Article

A study with overview of asthma, COPD that overlaps among different patients with different diseases

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ABSTRACT

Background: In this present time, it is a necessity to re-evaluate the basic concept of asthma as well as COPD, that these two are separate conditions, or when out of these two conditions one evolves from the other, or whether they both exists together.

Materials and Methods: Total 60 numbers of patients were included in our prospective study, those all have chronic disease of airways and were classified into three respective groups namely, i) chronic obstructive pulmonary disease, asthma–COPD overlap (ACO) [WU1] [k2] and the last one is asthma. The patients were selected from outdoor patient department of Khaja Nawaz Institute of Medical Sciences from the month of January 2020 to the month of September 2020, where the patients that suffers from chronic obstructive pulmonary disease and ACO were diagnosed carefully according to "GOLD" guidelines 2020 and the patients that suffers from asthma were carefully diagnosed according to the GINA guidelines 2020. All the patients that were selected in the study only after careful and thorough history taking, clinical examination of the patient, all the laboratory finding was done carefully, chest X-ray was done, spirometry was done before administration of bronchodilator and again spirometry was done after the administration of bronchodilator i.e. reversibility test was done, and last but not the least, examination of sputum was done that too carefully for careful eosinophil count.

Results: Total number of patients included in the study was 60 that suffers from COPD, Asthma, Asthma [WU3] COPD overlap. It included 41 (68.3%) males and 19(31.6%) females. In our prospective study out of 60 19 patients i.e. 31.9% out of total were diagnosed of having COPD, out of 60, 18 i.e. 30% have problem of asthma, and 18 patients i.e. 30% out of total were having ACO. We in our study found that all the three experimental groups show history of atopy, with 61.9% patients belong to ACO group, 17.3% belongs to COPD and 84.2% belongs to Asthma [WU4] group. When comparison between all the experimental groups were made regarding sputum eosinophil count, revealed that all the three experimental groups show positive eosinophil count with respect to 22.2% in case of ACO, 84.2% in case of asthma group and 13% in case of COPD.

Conclusions: Out of three experimental groups, only ACO group represents the highest percentage among different patients that have disease of obstructive airways. It also reveals some of the features of disease asthma like atopy and positive sputum eosinophil count along with some features of chronic obstructive pulmonary disease with respect to old age and those people has a positive history of smoking.

1. Introduction

The two most common diseases that are present in our community are COPD and asthma. Asthma can be detected in children as[1] a common allergic disease and it will respond very good to anti-inflammatory drugs and has good prognosis and it can be reversible physiologically.[2] In compare to COPD it is happened in middle aged or old age group people and it is irreversible airflow disease and it is caused mainly by tobacco smoking and due to poor

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prognosis death rate in premature in lungs is seen.[3] instead these all are useful descriptions, but on the other hand these all are limited because they are not been able to depict the spectrum of disease of obstructive airways, that can be seen in routine clinical practise.[4]

Lung function is said to accelerate the decline that occur in asthma disease, most commonly more in patients that has history of smoking and COPD is considered increasingly to be a treatment positive disease, now here the actual need of re-evaluating the old concept between the two diseases i.e. asthma and chronic obstructive pulmonary disease as both are the different entities, and in some conditions they both may exist together, or in some cases when one condition can turn into the other one. There are so many instances when where asthma and COPD can overlap each other at any time. The risk factors for the same are as follows, like old age, tobacco chewer, chronic smoker, respiratory infection.[1,5]

2. Materials and Methods

The patients were selected from outdoor patient department of Khaja Nawaz Institute of Medical Sciences from the month of January 2020 to the month of September 2020, where the patients that suffers from chronic obstructive pulmonary disease and ACO were diagnosed carefully according to "GOLD" guidelines 2020 and the patients that suffers from asthma were carefully diagnosed according to the GINA guidelines 2020. All the patients that were selected in the study only after careful and thorough history taking, clinical examination of the patient, all the laboratory finding was done carefully, chest X-ray was done, spirometry was done before administration of bronchodilator and again spirometry was done after the administration of bronchodilator i.e. reversibility test was done, and last but not the least, examination of sputum was done that too carefully for careful eosinophil count

2.1. Inclusion criteria

Patients of either gender between age group 30 to 60 years, Patient willing to give informed written consent.

2.2. Exclusion criteria

Those patients who suffer from restrictive disease of lung, patient suffers from bronchiectasis, patient suffers from chronic obstructive pulmonary disease exacerbation, and those who suffer from dysfunction of vocal cord were excluded from our study.

2.3. Methodology

The patients who all were included in the study only after full history taking along with full and thorough clinical examination, chest x-ray, thorough spirometry test done along with post bronchodilator reversibility test with thorough sputum analysis, in sputum examination induction of sputum was done by hypertonic saline or by use of mannitol is done by with the help of trained staff with mandatory precautions taken for respiratory air borne infection. The will be terminated when patient produced the sputum sample 5-10 ml, about 15 minutes off nebulization procedure achieved. Patient complaint of dyspnoea,[2–4,6] along with tightness of chest. Staining and count of the sputum were done with assessment of eosinophil count.[7–9]

2.4. Statistical analysis

All the data were described statistically in terms of standard Mean±SD, median and range, or frequencies (number of cases) and percentages when appropriate. All the comparison between all the different variables in numerical between the study groups was done with the help of one way analysis of variance test along post hoc multiple two group comparisons. For comparison of data i.e. categorical χ^2-test was done. In our study P values that are less than 0.05 considered as statistically significant. Statistical analysis was done by SPSS software.

3. Results

This experimental study was conducted over total 60 patients, those all have chronic airway disease, i.e. chronic obstructive pulmonary disease, asthma and lastly asthma chronic obstructive pulmonary disease overlap. Total number of male patients included in the study was 41 out of 60 that constitute 68.3% and total of 19 patients were female in this experimental study that constitutes about 31.6%.

In our study, out of 60 patients 19 patients were diagnosed of chronic obstructive pulmonary disease, that constitute about 31.9%, out of 60 patients 18 patients were diagnosed for asthma, that constitute for 31.9% and rest 18 out of 60 that constitute for 30% has come under category of asthma COPD overlap.(Table 2)

With the reference to age difference in different age groups, it was confirmed that patients suffering from ACO were older with respect to age that the patients suffering from asthma with the mean with respect to age was 51.32±8.43 and 49.43±8.43 years and the mean age of patients was 58.48±9.32, who all the suffering from chronic obstructive pulmonary disease, and was older than both the other two groups of the patient.as shown in Table 3.

As the above table shows the comparison between different groups with respect to history of atopy. We found in our study that all the three experimental groups showed positive history of atopy with different % in different groups, i.e. group ACO shows 61.1%, group constitutes of asthmatic patient shows 84.2% and group with COPD patients shows 17.3% out of all the cases.(Table 4)

Table 1: Sex distribution among the study group

	Males	Females	Total
No. of patients	41	19	60
Percentage	68.3	31.6	100

Table 2: Study group that is classified based on final diagnosis

	COPD	ACO	Asthma	Total
No. of patients	23	18	19	60
Percentage	38.3	30	31.9	100

Table 3: Age differences between the study groups

	COPD	ACO	Asthma
No. of patients	23	18	19
Mean± SD	58.48±9.32	51.32±8.43	49.43±8.43

Table 4: Comparison of different groups with respect to history of atopy

	Diagnosis		
	COPD (N=23)	ACO (N=18)	Asthma (N=19)
No			
Count	19	7	3
% within diagnosis	82.6	38.8	15.7
Yes			
Count	4	11	16
% within diagnosis	17.3	61.1	84.2

Table 5: Shows Comparison between different groups with respect to eosinophils in the sputum.

	Diagnosis		
	COPD (N=23)	ACO (N=18)	Asthma (N=19)
No			
Count	20	14	3
% within diagnosis	86.9	70.7	15.7
Yes			
Count	3	4	16
% within diagnosis	13.0	22.2	84.2

Above table reveals that, out from all the groups and population eosinophils are found in 22.2% in ACO group, 84.2% in asthmatics patient group, 13% in patient with chronic obstructive pulmonary disease. (Table 5)

4. Discussion

It was discovered that the pervasiveness of ACO changes among various distributed examinations, and this might be identified with the distinction in the contemplated populaces and contrasts in demonstrative measures. This study was done on total 60 number of patients that were divided into three different experimental groups. It included 41(68.3%) male and 19(31.6%) female's patients (out of all these, eight were asthmatics and one female patient was discovered as ACO). In all the asthmatic patients, persaviness with respect to group ACO was in the range of 13-30%. As stated by Gibson PG, the persaviness that was expanded with age arriving at 61% when the patient suffering from asthma were more than 65 years. According to Bosken CH patients having chronic obstructive pulmonary disease the pervasiveness of one of the experimental group i.e., ACO was in the range of 9 and 55% in various examinations. [10]

With respect to the age with respect to different gathering, it was found that patient confirmed as having ACO were likely to be more seasoned than the other group comprising of patients with asthma, with mean period of 51.32±8.43 and 49.43±8.43 years, and the mean times of patients with chronic obstructive pulmonary disease was found to be 58.48±9.32 and was more seasoned than the two other groups. [11] This concurred with certain creators, they found a critical distinction among ACO and COPD bunches with respect to age, which found to be lower with respect to ACO group than patient with chronic obstructive pulmonary disease group. [11,12] according to Cosio M, discovered that patients with ACO would in general be more seasoned and were fundamentally men. [10,12,13] This concurred with

consequences of Sköld, they found that most of the patients those were suffering from asthma in their investigation were totally non-smokers, on the other hand 76.2% patients with chronic obstructive pulmonary disease and 71.4% in the asthma-COPD were totally ex-smokers, who are not smoking now a days.[14]

In our indicated the correlation of gatherings with respect to history of atopy. We found that out of the total 61.1% of ACO group, and 84.2% of asthma group patient and 17.3% of chronic obstructive pulmonary disease patient has a history of atopy. These outcomes concurred with Brownunfavourably.[15 16]

Examination of study bunches with respect to sputum eosinophils uncovered that 22.2 % of ACO gathering, 84.2% of asthma gathering and 13% of COPD bunch had positive sputum eosinophils. It can be stated that atopy, IgE or eosinophilia count in the blood or in the sputum can be used to differentiate between patient with ACO among those with COPD.[17] It was stated that more level of eosinophilic count in the bronchial aggravation in patients with ACO was sufficient enough to answer more noteworthy reaction with respect to ICS treatment.[18,19]

5. Conclusions

ACO represents a large percentage among patients with obstructive airway diseases. It demonstrates some of the clinical features of asthma like positive eosinophil count, atopy and along with some features of chronic obstructive pulmonary disease.

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8. Conflict of Interest

Authors has no conflict of interest whatsoever.

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