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A study on clinical profile of patients with acute exacerbation of COPD

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Abstract
In 2002 COPD was the fifth leading cause of death. Total deaths from COPD are projected to increase by more than 30% in the next 10 years unless urgent action is taken to reduce the underlying risk factors, especially tobacco use. Estimates show that COPD becomes in 2030 the third leading cause of death worldwide. Sputum cultureand sensitivity was done collecting sputum in sterile containers and were incubated on sheep blood agar, chocolate agar and Mac conkey agar. IgG antibodies against viruses and atypical organisms is done by indirect immunofluorescent assay(IFA) kit.Sensitivityis 94.6% to 100%and specificity is 90% to 100%based on micro-organism.Most of them have smoking history with 82% of Ex-smokers and 6% of smokers.Only 12% were non-smokers. Renal failure was seen in 42% of patients. Chest x-ray showed opacities in only 24% of patients.
Keywords: COPD, Sputum culture, IgG antibodies

Introduction

According to WHO estimates, 65 million people have moderate to severe chronic obstructive pulmonary disease (COPD). More than 3 million people died of COPD in 2005, which corresponds to 5% of all deaths globally. Most of the information available on COPD prevalence, morbidity and mortality comes from high-income countries. Even in those countries, accurate epidemiologic data on COPD are difficult and expensive to collect. It is known that almost 90% of COPD deaths occur in low-and middle-income countries[1].

At one time, COPD was more common in men, but because of increased tobacco use among women in high-income countries and the higher risk of exposure to indoor air pollution (such as biomass fuel used for cooking and heating) in low-income countries, the disease now affects men and women almost equally[2].

In 2002 COPD was the fifth leading cause of death. Total deaths from COPD are projected to increase by more than 30% in the next 10 years unless urgent action is taken to reduce the underlying risk factors, especially tobacco use. Estimates show that COPD becomes in 2030 the third leading cause of death worldwide[3].

Prevalence-most rigorous existing estimates of the general prevalence of chronic bronchitis in rural areas to lie between 6.5% and 7.7%. These figures are unlikely to apply to all Indian subpopulations, so the general prevalence of chronic bronchitis in India remains unknown.

Accurate estimates of the prevalence of chronic bronchitis/COPD from across the country are required to supplement existing data if optimal management strategies are to be devised[4].

Methodology

Demographic data and management in hospital: Detailed information on the COPD exacerbations including demographic data (age, sex, height and weight, background illness and functional status), symptoms, blood test results and length of hospital stay was recorded.

In addition Chest radiographs will be assessed for any abnormalities like pneumonic changes

was be noted. The type and duration of antibiotics used will be recorded. Any non-invasive ventilation used or intensive care unit admissions will be assessed.
Sputum for Gram stain, Sputum culture & sensitivity and IgG antibodies against viruses and atypical organisms will be sent.
Sputum cultureand sensitivity was done collecting sputum in sterile containers and were incubated on sheep blood agar, chocolate agar and Mac conkey agar.
IgG antibodies against viruses and atypical organisms is done by indirect immunofluorescent assay (IFA) kit. Sensitivity is 94.6% to 100% and specificity is 90% to 100% based on micro-organism.

Inclusion criteria
All hospitalised patients with Acute Exacerbation of COPD fitting into GOLD criteria.

Exclusion criteria
Patients with recent hospital admission for any other reasons,within past 3 months.
Patients with other causes of acute exacerbation of COPD like recent myocardial infarction,cardiac failure, pneumothorax, pulmonary embolism, etc.

Type of study
Prospective type of study.

Results

Table 1: Distribution according to age

Age	Count	Percent
51-60	9	18.0
61-70	14	28.0
71-80	23	46.0
81-90	4	8.0
Mean ± SD	70.5 ± 8.3	

Mean age of the patients is 70.5 years with highest in the group of 71-80 years.

Table 2: Distribution according to sex

Sex	Count	Percent
Male	46	92.0
Female	4	8.0

Male preponderance with male to female ratio of 23:2.

Table 3: Distribution according to altered mental status

Altered Mental status	Count	Percent
Yes	10	20.0
No	40	80.0

20% of patients are having altered mental status related to Hypercapnia.

Table 4: Distribution according to smoking

Smoking	Count	Percent
Non smoker	6	12.0
Ex-Smoker	41	82.0
Smoker	3	6.0

Most of them have smoking history with 82% of Ex-smokers and 6% of smokers.Only 12% were non-smokers.

Table 5: Distribution according to creatinine

Creatinine	Count	Percent
<= 1.2	29	58.0
> 1.2	21	42.0
Mean ± SD	1.3 ± 0.4	
Median	1.2	

Renal failure was seen in 42% of patients.

Table 6: Distribution according to chest x-ray

Chest X-ray (opacities)	Count	Percent
Yes	12	24.0
No	38	76.0

Chest x-ray showed opacities in only 24% of patients.

Discussion

Exacerbation of COPD is defined as an event in the natural course of the disease characterized by a change in the patient's baseline dyspnea, cough, and/or sputum that is beyond normal day-to-day variations, is acute in onset, and may warrant a change in regular medication in a patient with underlying COPD[5].

Acute exacerbations are an important cause of mortality and morbidity in patients with COPD, especially with following hospital admissions.

Exacerbations also have a marked effect on the quality of life of patients.Frequent exacerbations (more than two per year) have been associated with more dyspnea and reduced exercise capacity, a greater decline in health status and a greater likelihood of becoming housebound as there faster decline in lung function[6].

The urinary excretion of desmosine and isodesmosine (byproducts of lung elastin degradation) are raised in exacerbations compared with the stable state and higher levels of these proteins have been associated with a faster decline in FEV_1 in COPD[7].

It may be that patients who experience frequent AECOPD have increased bronchial inflammation in the stable state compared with those with fewer episodes.

Advanced age, productive cough, duration of COPD, history of antibiotic therapy, COPD-related hospitalizations in previous year, chronic mucus hypersecretion and other comorbidities(IHD, Chronic heart failure, Diabetes mellitus)[8].

In general low FEV1 is associated with risk of exacerbations. But according to the ECLIPSE study, the single best predictor of exacerbations is history of exacerbations rather than COPD severity.

Recurrent exacerbations are associated with GERD also.

Pulmonary vascular disease is also associated with risk of COPD exacerbations. Pulmonary vascular disease was assessed by CT scans comparing diameter of pulmonary artery and aorta.

It is estimated that 70 to 80 percent of COPD exacerbations are due to respiratory infections Viral and bacterial infections cause most exacerbations, whereas atypical bacteria are a relatively uncommon cause. The remaining 20 to 30 percent are due to environmental pollution or have an unknown etiology[9].

Some COPD exacerbations of unknown etiology may be related to other medical conditions, such as myocardial ischemia, heart failure, aspiration, or pulmonary embolism. The

relationship between COPD exacerbation and pulmonary embolism was illustrated by a meta-analysis of five observational studies[10].

Conclusion

- Male preponderancewith male to female ratio of 23:2.
- Renal failure was seen in 42% of patients.
- Most of them have smoking history with 82% of Ex-smokers and 6% of smokers.Only 12% were nonsmokers.

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