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Research Article

CLINICAL PROFILE OF ADULTS PRESENTING TO EMERGENCY WITH ACUTE DYSPNEA

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A B S T R A C T

Introduction: Dyspnea is common chief complaint in the emergency department. Over the past decade, the rate of hospitalization for heart failure has increased by 159% in the western countries. Rapidly and accurately determining the etiology of acute dyspnea in patients presenting in emergency is extremely important. The two chief causes of dyspnea, congestive heart failure (CHF) and lung disease, are often difficult to differentiate.
Material and Methods: A prospective observational study was conducted on 200 adult patients admitted to emergency with acute dyspnea. Patients having age less than 20 yrs were excluded from the study. Appropriate statistical analysis of the data was performed.
Results: Mean age of the patients were 65.3 yrs and males constituted about 53% patients. In our study, 26% patients had length of stay upto 5 days, 50% had length of stay 6-10 days, 15% had length of stay 11-15 days, 4% had length of stay 16-20 days, 1% had length of stay 21-25 days, 2% had length of stay>25 days.
Conclusion: We conclude that acute heart failure constitute the patients presenting to emergency with acute dyspnea. Ischemic heart diseases contribute up to half of these patients. Therefore, we conclude that IHD should be kept as the first differential in patients presenting to emergency with acute dyspnea and should undergo early evaluation to rule out cardiac disease.

INTRODUCTION

Dyspnea is common chief complaint in the emergency department. The differential diagnosis of acute dyspnea includes respiratory tract infections, pulmonary embolism, asthma, exacerbation of chronic obstructive pulmonary disease and congestive heart failure.[1] Heart failure is a major public health problem. Over the past decade, the rate of hospitalisation for heart failure has increased by 159% in the western countries.[2] Rapidly and accurately determining the etiology of acute dyspnea in patients presenting in emergency is extremely important. The two chief causes of dyspnea, congestive heart failure (CHF) and lung disease, are often difficult to differentiate.[3,4]

MATERIAL AND METHODS

A prospective observational study was conducted on 200 adult patients admitted through emergency services of Dayanand medical college and hospital (DMCH) and/or Hero DMC Heart institute. Name, age, gender, presenting complaints, history of present illness, past history, treatment history, general physical examination and systemic examination was recorded on a predesigned proforma. A written informed consent was taken from patients/attendants.

Evaluation

History: The history and physical examination was recorded as per enclosed questionnaire. The data collected included history of dyspnea, its duration and associated symptoms. The past medical history was also noted to evaluate for risk factors.

Physical Examination: Any localization in general as well as systemic examination was evaluated.

Investigations: Investigations considered necessary by the treating unit/department were recorded. The following investigations were evaluated:- Chest X ray, electrocardiogram, complete blood count, liver function tests, renal function tests, echocardiography. Any other investigations like Troponin T, d-dimer, CPK as advised by the treating unit.

Analysis

Discrete categorical data were presented as n (%), continuous data were given as mean ± SD & range or median and interquartile range, as appropriate. Normality of quantitative data was checked by measures of Kolmogorov Smirnov tests

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of normality. Mann-Whitney U-test was used for statistical analysis of 2 groups, for more than 2 groups Kruskall Wallis test or ANOVA was applied. Categorical data was compared by Chi-square or Fisher's exact test. To see correlation between different variables Pearson correlation coefficient was calculated. All statistical tests were two-sided and performed at a significance level of α=0.05. Analysis was conducted using SPSS for Windows (version 17.0; SPSS Inc., Chicago, IL, USA).

OBSERVATIONS AND RESULTS

In our study, 57% patients were males and 47% were females. The mean age was 62.30 yrs with minimum age being 33 yrs and maximum being 91 yrs. In our study 2% patients had age between 31-40 yrs, 8% had age between 41-50 yrs, 28% had age between 51-60 yrs, 31% had age between 61-70 yrs, 19% had age between 71-80 yrs and 12% had age above 80 yrs of age. (Table 1)

Table 1 Age distribution

Age group (years)	No.(n)	%age
20-30 yrs	0	0
31-40 yrs	4	2
41-50 yrs	16	8
51-60 yrs	56	28
61-70 yrs	62	31
71-80 yrs	38	19
>80 yrs	24	12

In our study, we observed 12% patients had history of smoking while 54% had history of alcohol. Twenty-four percent patients had ejection fraction above 60%, 9% had ejection fraction 46-59, 31% had ejection fraction 31-45 and 36% had ejection fraction <31. (Fig 1) Sixty-seven percent patients had systolic dysfunction and 31% had diastolic dysfunction and 2% patients had no dysfunction.

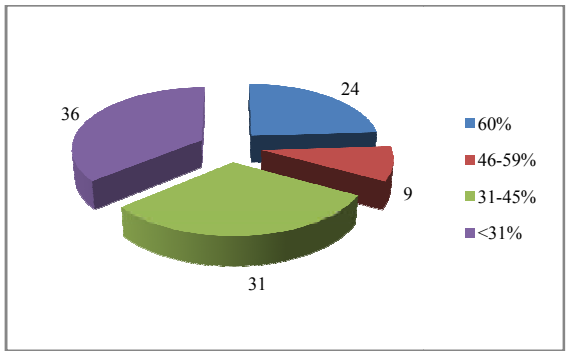

Fig 1 Ejection fraction among patients presenting to emergency with acute dyspnea

Nineteen percent patients (19%) had ST segment depression, 12% had ST elevation, 9% had left ventricular hypertrophy, 8% had right bundle branch block, 12% had left bundle branch block, 11% had sinus tachycardia, 3% had complete heart block, 7% had atrial fibrillation and 19% had normal sinus rhythm. (Table 2)

Table 2

ECG changes	Number of patients	%age
ST segment depression	38	19
ST elevation	24	12
LVH	18	9
RBBB	16	8
LBBB	24	12
Sinus Tachycardia	22	11
Complete heart block	6	3
AF	14	7
NSR	38	19

Nine percent patients had wheezing, 89% had crepts and 2% had reduced breath sounds. twenty-two patients have cardio-pulmonary angle blunting, 48% had cardiomegaly, 23% had opacities and 7% had no abnormality on chest x-ray. Fifty-five patients had IHD, 16% had dilated cardiomyopathy, 11% had COPD (chronic obstructive pulmonary disease), 6 patients had normal ejection fraction heart failure, 3% had valvular heart disease, 2% each of anxiety neurosis and bronchial asthma, 1% each of hypertensive heart disease, rheumatic heart disease, congestive heart failure, interstitial lung disease, pneumonia and pulmonary embolism as the final diagnosis. (Table 3) & (Fig 2)

Table 3

Diagnosis at Discharge	No. (n)	%age
IHD	110	55
Dilated cardiomyopathy	32	16
COPD	22	11
Normal ejection fraction heart failure	12	6
Valvular disease	6	3
Anxiety neurosis	4	2
Bronchial asthma	4	2
Hypertensive heart disease	2	1
Pneumonia	2	1
Pulmonary embolism	2	1
Rheumatic heart disease	2	1
Interstitial lung disease	2	1

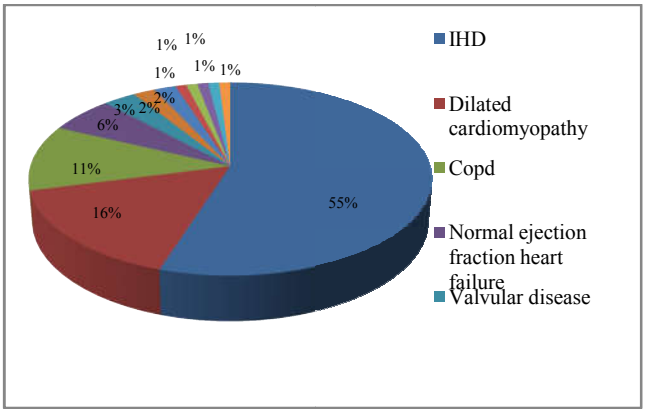

Fig 2 Diagnosis of patients presenting to emergency with acute dyspnea

Two percent patients had heart rate <60, 55% had heart rate 60-100 and 43% had heart rate >100.One percent patient had systolic blood pressure <90, 88% had systolic blood pressure 90-140 and 11% had systolic blood pressure >140. Patients had mean systolic blood pressure was 123 mmHg in our study.

In our study, 28% patients had serum sodium <135, 70% had serum sodium 135-145 and 2% had serum sodium >145.Seven percent patients had haemoglobin 7-9, 22% had haemoglobin >9-11 and 71% had haemoglobin >11. Thirty-seven percent patients had CPK-MB upto 24 and 63% patients had CPK-MB >24. Forty-eight percent patients had Trop-T positive and 52% had Trop-T negative. Eighty percent patients were discharged, 11% patients went lama (left against medical advice) and 9% patients expired. In our study, 26% patients had length of stay upto 5 days, 50% had length of stay 6-10 days, 15% had length of stay 11-15 days, 4% had length of stay 16-20 days, 1% had length of stay 21-25 days, 2% had length of stay >25 days.

DISCUSSION

Dyspnea is the chief symptom in patients with CHF accounting to 2.7% of emergency visits and 15-25% of all hospital admissions.[5-8] It is estimated that 5.8 million people in the United States have heart failure with approximately 670,000 new cases occurring each year.[9] Prevalence of Congestive Heart Failure in India was 18.8 million Indians (1.76% of population), the Incidence rate was 1.57 million per year (0.15%).[10] Congestive heart failure (CHF) occurs when the heart cannot deliver a sufficient amount of blood to the body.[11] This condition can occur at any age but is most prevalent in an aged population. Symptoms of CHF include shortness of breath, fluid retention and respiratory distress. These symptoms are often vague and non specific for detecting early stages of CHF.[12]

In our study the mean age of the patients was 62.3 years which was comparative to the study done by Shrestha A *et al*.[13] Majority of the patients were males in our study(57%) while Shrestha A *et al* observed female constituting 60% of the patients.[13]

We observed that the majority of patients have normal systolic blood pressure while hypotension was present in only 1% patients, a finding that is supported by multiple studies.[14-16] The mortality rate was 9% in our study which is similar to the study by Tazzavi *et al*, who observed it to be 8%.[15] In our study, 60% of the patients presenting with cardiac cause of dyspnea had Trop-T positive which is comparative to the earlier studies, in which Trop-T was positive in 40-70% patients presenting with acute cardiac failure.[17-19] In our study, anemia was observed in 29% patients which was similar to the study by *et al*.[20]

We observed that the majority of the patients presenting with acute dyspnea had under underlying cardiac disease (80%) followed by COPD in 11% patients which was in contrast to the finding observed by Shrestha A *et al*, in which nearly 43% had COPD as the underlying cause of dyspnea. The difference in observation is due to the very low prevalence of smoking in the state of Punjab as observed in our study compared to Shrestha *et al* (12% vs 40%).[13] On chest x-ray, pleural effusion was observed in 22% patients in our study which was comparative to the study done by Shrestha *et al*.[13] Cardiomegaly on chest x-ray was observed in 48% patients in our study while Shrestha et observed cardiomegaly in 38% patients.[13]In our study, tachycardia was observed in 43% patients which was comparative to the study done by Shrestha *et al* who observed it in 36% patients.[13]

CONCLUSION

We conclude that acute heart failure constitute the patients presenting to emergency with acute dyspnea. Ischemic heart disease contribute upto half of these patients. Majority of the patients have normal BP at presentation. Mean age is 62 years. Most common ECG finding was ST segment depression. One-forth patients have normal ejection fraction. Therefore, we conclude that IHD should be kept as the first differential in patients presenting to emergency with acute dyspnea and should undergo early evaluation to rule out cardiac disease.

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