Original Article

Current Trends In Prescription Pattern And Risk Factor Analysis Of Patients Admitted With Acute Heart Failure In A Tertiary Care Teaching Hospital

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Abstract

Objectives: To assess the percentage of patients made available of mortality reducing drugs, To assess the short term morbidity and mortality rate in AHF patients. To assess the incidence of CAD in AHF patients

Methods: A prospective observational study was conducted in cardiology department during a study period of 6 months. Detailed literature review was done by using tertiary, secondary and primary resources. All the required study materials like informed consent document, patient information sheet and data entry form were designed .The study was conducted only after getting approval from the Institutional Ethical Committee (IEC). 106 patients, who met the inclusion criteria, were enrolled in the study. The details like risk factors, incidence of CAD, Prescribed drugs, short term morbidity and mortality within 3 months was collected.

Results: In a total of 106 patients in cardiology inpatient department, 67% of patients were prescribed with mortality reducing drugs. 28(26%)of patients having morbidity and 18(17%) of patients having mortality within the 3 months.38 patients having the incidence of CAD.

Conclusion: Based on the study result BB, Diuretics and OHA are the commonly prescribed drugs followed by ACE inhibitors, vasodilators, antiplatelets and statins. The most common risk factors associated with ADHF observed are Smoking, DM, HTN, DLP and CAD, Anemia and Family h/o ADHF.

Keywords: Incidence, morbidity, mortality, risk factors.

1. INTRODUCTION

Acute heart failure is also known as acute decompensated heart failure is a severe worsening of the signs and symptoms of heart failure usually involving dyspnea, swelling of legs and feet[1]. The incidence and prevalence of ADHF vary by age, and HF being the most common primary diagnosis among hospitalised persons over 65years[2]. Acute decompensated heart failure (ADHF) is linked to high mortality and morbidity, as well as frequent hospitalizations[3]. In Asia an increase in the incidence and prevalence of cardiovascular diseases leads to the development of ADHF[4]. In US the mortality within hospital due to ADHF range from 4%-7%[5]. Increasing age, systemic hypertension, diabetes mellitus and dislipidemia are the major risk factors of ADHF[6]

2. METHODS

A Prospective observational study, entitled "Current trends in the prescription pattern and risk factor analysis with acute decompensated heart failure" was conducted on 106 patients of age 18 years or above, with a clinical diagnosis of Acute heart failure during the six months study period.

The relevant data of each patient was collected from inpatient records. Demographic details, medical history, social habits, associated co-morbidities, diagnosis, drugs prescribed during hospitalization was collected from medical records and by patients and bystander interview. Details about short term morbidity (readmission, re-occurrence) and mortality within 3 months were collected by follow up through telephone.

2.1 STUDY DURATION

The total duration was 6 months

2.2 STUDY POPULATION

A minimum of 106 patients who admitted in the Cardiology department during the study period were included in the study. It is calculated by the statistical equation

$n=4pq/d^2$

- Where p=percentage of patients receiving mortality reducing drugs
  q= 100-p
  $n= (4x31x69) \div 4^2 = 106$

2.3 SUBJECT SELECTION

The patients were selected during the time period from November 2019 to May 2020.From the 200 patients who admitted Cardiology department, 106 patients who satisfied the inclusion, as well as exclusion criteria, were allotted to study. The sample population was requested to answer at the time of their first review and relevant information was collected.

2.3.1 Inclusion criteria

- ❖ Patient diagnosed with Acute heart failure
- ❖ ADHF patients> 18 years
- ❖ Patient willing to give consent
- ❖ Both male and female patients
- ❖ ADHF patients with LVEF<50%

2.3.2 Exclusion criteria

- Outpatients
- Pediatric patients

2.4 SOURCES OF DATA

Patient and patient representative interview and patients case records which contain Patient's demographic details, risk factors, co morbidities, diagnosis and prescribed drugs.

2.5 STATISTICAL ANALYSIS

The data are analyzed using SPSS (Statistical package for social sciences).Analysis was done by using chi square test. A p value of < 0.05 was considered to be statistically significant.

RESULT

BASED ON AGE

The age wise distribution describes that high frequency in between 58-67(41%) followed by 48-57(28%), >77(13%), 68-77(11%), 38-47(3%), 28-37(2%), 18-27(2%).

Table No: 1 Distribution based on age

AGE	FREQUENCY	PERCENTAGE
18-27	2	2
28-37	2	2
38-47	3	3
48-57	30	28
58-67	43	41
68-77	12	11
>77	14	13
TOTAL	106	100

BASED ON GENDER

The gender wise distribution describes that high percentage in male (71%) followed by female (29%).

Table No: 2 Distribution based on gender

SEX	FREQUENCY	PERCENTAGE
MALE	75	71
FEMALE	31	29

TOTAL	106	100

BASED ON RISK FACTORS

This table shows 11% of patients having DM and HTN,9%of patients are smokers alone,8% having DM, 7.2% having HTN and family H/O ADHF, 7% having DM+HTN+CAD,5.6% having DM, HTN, DLP, CAD, Anaemia, CKD, COPD and smoking, 5% having DM, DLP,CAD, Alcohol, Anaemia and family H/O ADHF, 4% of patients only having H/o CAD and other 4% having HTN,DLP and Anaemia, 3% having DM, HTN,CAD family H/O ADHF and COPD, 2% are experiencing HTN,CKD and family H/O ADHF, 0.9% of patients having DM,HTN,DLP and Family H/O ADHF.

Table No: 3 - Distribution based on Risk factors

RISKFACTORS	FREQUENCY	PERCENTAGE
SMOKING	10	9
DM+HTN+DLP+CAD	6	5.6
DM+CAD+ADHF	1	0.9
HTN+DIP+CAD+ALCOHOL	5	5
HTN+DLP+ANEMIA	4	4
HTN+FAMILY HISTORY OF ADHF+CKD	2	2
HISTORY OF CAD	4	4
ANEMIA	6	5.6
DM+HTN+CAD+FAMILY HISTORY OF ADHF	3	3
DM	9	8
HTN+CKD	2	2
DM+HTN+CAD+ANEMIA	6	5.6
DM+HTN+DLP	6	5.6
DM+HTN+CAD	7	7
HTN+ADHF	8	7.2
DM+HTN+DLP+CKD+COPD+SMOKING	6	5.6
FAMILY HISTORY OF ADHF+ANEMIA	5	5
DM+HTN	12	11
CAD+COPD+DLP+ADHF	3	3
DM+HTN+DLP+ADHF	1	0.9
TOTAL	106	100

BASED ON INCIDENCE OF CAD

This table shows 36% of patients having incidence of CAD and 64% of patients not having incidence of CAD.

Table no: 4 Distribution based on Incidence of CAD

Incidence of CAD	Frequency	Percentage
Present	38	36
Absent	68	64
Total	106	100

DISTRIBUTION BASED ON ADMINISTRATION OF MORTALITY

REDUCING DRUGS

33% of patients were not prescribed mortality reducing drugs followed by 18% of patients were given with BB,10.3% of patients were given with BB and AA.9.4% of patients were given with BB and ARB.8% were given with ACE inhibitors.7.4% of patients with ARB. 4% were given with BB, ACE and AA and another 4% is given with ACE and AA.3 % of patients were given with BB, ARB and AA. 2% of patients were given with ACEI and BB. And 0.9% of patients were given with ARB and AA.

Table no: 5 **Distribution based on administration of mortality reducing drugs**

MORTALITY REDUCING DRUGS	FREQUENCY	PERCENTAGE
NIL	35	33
BB	19	18
ACE Inhibitors	9	8
ARB	8	7.4
BB+ACE Inhibitors	2	2
BB+ARB	10	9.4
BB+AA	11	10.3
ACE Inhibitors +AA	4	4
ARB+AA	1	0.9
BB+ACE Inhibitors +AA	4	4
BB+ARB+AA	3	3
TOTAL	106	100

DRUG ADMINISTERED DURING HOSPITALIZATION

In this table 11(10%) were given with combination of BB, Diuretic and OHA. 11(10%) were given with BB and Diuretics.10 (9%) were given with combination of BB, ACE, Vasodilators, Antiplatelets, Diuretics and Statins.7(6.6%) of patients were given with antiplatelets, diuretics, statins, anticoagulants, OHA.6 (6%) were given with combination of ARB, antiplatelets, diuretics, statins, methylxanthines, OHA. Another 6(6%) were given with

antiplatelets, vasodilators, diuretics as three drug combinations. 5(4.9%) of patients were given with antiplatelets, vasodilators, diuretics, OHA, CCB. Another 5(4.9%) were given with combination of BB, antiplatelets, vasodilators, diuretics. 4(3.7%) of patients were given with three drug combinations of BB+antiplatelets+statins. Another 4(3.7%) were given with diuretics, BB, AA, OH and ACE, antiplatelets, vasodilators, diuretics, statins, OHA (3.7%) and BB+diuretics+OHA(3.75). 3(2.8%) were given with ARB, antiplatelets, vasodilators, statins and antiplatelets, AA as dual drug combination and BB, ACEI, AA, antiplatelets, vasodilators, statins, OHA. 2(1.8%) of patients were given with BB, ACEI, OHA and vasodilators, statins, methylxanthines, anticholinergics and with ARB, AA, statins, antiplatelets, vasodilators, anticoagulants and another 2% with ARB, AA, antiplatelets, vasodilators, statins, xanthenes, anticholinergics, OHA and BB, ARB, antiplatelets, diuretic, statins and OHA. 1(0.94%) were given with ACE only and another 1(0.94%) with vasodilators, statins, OHA, CCB and with BB, ACE as dual drug combination and ACE, AA, OHA and vasodilators, diuretics, statins, methylxanthines, OHA and antiplatelets, vasodilators, diuretics and OHA.

TABLE 6: DISTRIBUTION BASED ON DRUG ADMINISTERED DURING HOSPITALIZATION.

BB+ANTIPLATELETS+STATINS	4	3.7
BB+ARB+ANTIPLATELETS+DIURETIC+STATINS+OHA	2	1.8
BB+DIURETICS	11	10
ARB+ANTIPLATELETS+DIURTICS+STATINS+METHYLXANTHINES+OHA	6	6
DIURETICS	4	3.7
BB+ANTIPLATELETS+VASODILATORS+DIURETICS	5	4.9
ANTIPLATELETS+VASODILATORS+DIURETICS	6	6
VASODILATORS+STATINS+OHA+CCB	1	0.94
ARB+AA+ANTIPLATELETS+VASODIL+STATINS+XANTHINES+ANTICHOLINERGICS+OHA	2	1.8
BB+ACE	1	0.94
ARB+AA+STATINS+ANTIPLATELETS+VASODILATORS+ANTICOAGULANTS	2	1.8
ARB+ ANTIPLATELETS+VASODILATORS+STATINS	3	2.8

BB+AA+OHA	4	3.7
VASODILATORS+STATINS+METHYLX ANTHINES+ANTICHOLINERGICS	2	1.8
ANTIPLATELETS+AA	3	2.8
BB+ACE+AA+ANTIPLATELETS+VASO DILATORS+STATINS+OHA	3	2.8
ACE+ANTIPLATELETS+VASODILATO RS+DIURETICS+STATINS+OHA	4	3.7
ACE+AA+OHA	1	0.94
ANTIPLATELETS+DIURETICS+STATINS+ANTICOAGULANTS+OHA	7	6.6
BB+DIURETICS+OHA	4	3.7
VASODILATORS+ DIURETICS+STATINS +METHYLX ANTHINES + OHA	1	0.94
BB+ACE+OHA	2	1.8
ANTIPLATELETS+ VASODILATORS+ DIURETICS+OHA	1	0.94
TOTAL	106	100

BASED ON MORBIDITY

This table shows 28(26%) patients having morbidity and 78(74%) not having morbidity within 3 months.

Table no: 7 Distribution based on morbidity

Morbidity	**Frequency**	**Percentage**
Present	28	26
Absent	78	74
Total	106	100

BASED ON MORTALITY

This table shows 18(17%) of patients having mortality and 88 (83%) of patients not having mortality within 3 months.

Table no: 8 Distribution based on mortality

MORTALITY	FREQUENCY	PERCENTAGE
PRESENT	18	17
ABSENT	88	83
TOTAL	106	100

COMPARISON OF MORTALITY AND MORTALITY REDUCING DRUGS ADMINISTERED

This table shows 10 mortalities in patients did not receive mortality reducing drugs. No one having mortality in patients receive BB.9 patients receive ACEI and 2 of them had mortality.8 patients had received ARB and 2 patients with AA no one having mortality.

10 patients received BB+ACEI and 2 patients had mortality. 11 patients received BB+ARB and 2 patients had mortality. BB+AA combination is received by 4 patients and 2 patients had mortality. 1 patient receive combination of ACEI+AA and had no mortality. ARB+AA combination is given to 4 patients, 1 patient had mortality. BB+ACEI+AA is given to 3 patients and no one had mortality.

TABLE NO.9 : **Comparison of mortality and mortality reducing drugs**

	MORTALITY		
DRUGS	ABSENT	PRESENT	TOTAL
NIL	25	10	35
BB	19	0	19
ACE	7	2	9
ARB	8	0	8
AA	2	0	2
BB+ACE	8	2	10
BB+ARB	9	2	11
BB+AA	3	1	4
ACE+AA	1	0	1
ARB+AA	3	1	4
BB+ACE+AA	3	0	3
TOTAL	88	18	106

DISCUSSION

In the recent study on prescription pattern of chronic heart failure, **Babu b, et al** [7] states that Diuretics was the most commonly prescribed drug (100%). Diuretics and betablockers (22%) are the two drug combination medications most commonly prescribed. From our total population of 106 patients BB, Diuretic and OHA (10 %) three drug combination, BB and diuretics (10%) two drug combination medicines are most commonly prescribed. **Teng TH et al** [4] states that to improve the clinical status and survival of HF patients, ACEs or ARBs or BB have been documented. In this study only 67% of patients were administered with mortality reducing drugs. In that BB are most commonly prescribed followed by three drug combinations of BB, ACEI and AA (4%) and BB, ARB and AA (3%) and two drug combinations of BB and AA unni(10.3%), BB and ARB (9.4%).

Neiminen MS et al [2] says ADHF incidence and prevalence are increasing with increasing age. In this study age wise distribution describes that high frequency (41%) in between 58-67 years. The gender wise distribution describes that high frequency in male (75%) followed by female (29%).

The risk factors found in our study is Diabetes mellitus, Hypertension, CAD, Family history of ADHF, Dyslipidemia, Anemia, CKD, Smoking, COPD and alcohol intake. Out of 106 patients 36% having incidence of CAD and 64% patients not having incidence of CAD.

Morbidity and mortality rates are still high in a study conducted by **Nassar AI et al** [1]. In this study 18(17%) of patients having mortality and 88 (83%) of patients not having mortality and 18(17%) of patients having mortality and 88 (83%) of patients not having mortality within 3 months.

CONCLUSION:

In our study we observed BB, Diuretics and OHA are the commonly prescribed drugs followed by ACE inhibitors, vasodilators, antiplatelets and statins. In mortality reducing drugs BB are the highest prescribed drug followed by ACE inhibitors, ARB and AA. From the collected data it has been observed that the most common risk factors associated with ADHF are Smoking, DM, HTN, DLP and CAD, Anemia and Family h/o ADHF. Most of the patients not having the incidence of CAD. Most patients having the prevalence of CAD. Morbidity and mortality rate is less in ADHF patients within 3 months.

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