DETERMINATION OF PATIENTS ADHERANCE TO BETA-BLOCKERS AFTER MYOCARDIAL INFARCTION DISCHARGE

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ABSTRACT

Beta-blockers, which are considered as one of the most important drugs in the secondary prevention of AMI, were underutilized by many patients over the world, though there is no absolute contraindication. Though the outcome of various studies showed that the use of beta-blockers in post –MI patients with mild COPD, Asthma, Diabetes may also get benefited but still the usage is less. In view of this our study mainly aims to determine whether the patients are in compliance with their prescriptions or not. It also targets how to improve the adherence of patients to the prescription drugs. The present study is an observational, prospective, non-interventional in which data on 320 patients surviving acute- MI over 8 months was collected, at KIMS hospital. Among 320, 205 discharged with prescription on beta-blocker and 115 without a prescription on beta-blockers. Out of 205 patients, only 160 prescriptions were received during the first 30 days after discharge. This number had declined to 92, 84 after 120 and 240 days respectively. The decreased number of prescriptions was also seen in patients who were not discharged on beta-blockers; initially 115 prescriptions were received during the first 30 days, followed by 103, 96 after 120 and 240 days respectively. Our study mainly concludes that along with appropriate dosing and monitoring, patient education is essential to maximize efficacy of therapy, moreover the decreased usage of beta-blockers in post-MI patients indicates the need of pharmacist intervention for the regular use of beta-blockers by patients for secondary prevention of AMI.

KEY WORDS: Acute Myocardial Infarction, beta-blocker therapy, Chronic Obstructive Pulmonary Disease, Asthma, Non-interventional study.

INTRODUCTION

Despite being the guidelines issued by ACC (American college of cardiology) and (AHA) American heart association for the routine use of Beta-blockers in post MI patients[1,2], the use still remains suboptimal. This suboptimal usage of Beta-blockers can be seen especially in those patients who are not discharged on Beta-blocker therapy, which may lead to increased risk of morbidity and mortality[3].

Even though in many clinical trials, it was concluded that the beta-blockers may be beneficial for COPD or Asthma patients with mild disease4, but the number of prescriptions filled with Beta-blockers in post-MI patients still remains suboptimal[5]. Moreover, patients who initially use these medications may later discontinue their use, either because of intolerance or non-compliance with recommended care, even though the use of Beta-blockers in post-MI patients is recommended indefinitely[6]. Under utilization of Beta-blockers may be attributed, in part, to fear of adverse effects, especially in elderly and in patients with concomitant disorders such as mild COPD and Asthma, Diabetes, Heart failure, though many studies have shown that such patients are precisely the one who derive the greatest benefit from Beta-blockers[7,8]. Two prior studies have addressed the outpatient use of beta-blockers post AMI, but did not have information on whether these drugs had actually been prescribed at discharge. Soumerai et al, showed that only 21% of the subjects received one or more prescriptions for beta-blockers within 90 days post-AMI discharge[9]. Patients who filled a prescription for beta-blockers as outpatients had a significantly lower risk of mortality and readmission at two years after discharge[10]. Another study assessed the proportion of post-AMI patients using beta-blockers within the first 90 days after discharge and reported a significant increase from 39.6% in 1994 to 58.6% in 1997[11]. Two meta-analyses of randomized trials reported a reduction in mortality of approximately 30 percent in patients with heart failure who received beta blockers.[12,13] Carvedilol (Coreg) was labeled by the U.S. Food and Drug Administration for the treatment of mild to moderate heart failure after publication of a large randomized trial that demonstrated a 65 percent mortality reduction in patients who received this agent.[14]Subsequently, studies of the beta blockers bisoprolol[15] and metoprolol[16] in the treatment of heart failure were terminated early when reductions of 34 percent in all-cause mortality and 40 to 45 percent in sudden death were demonstrated. Although there was a definite trend towards improvement, the absolute numbers may be misleading because active prescription refilling for any medication within the same 90-day period post-AMI was an inclusion criterion for the study[17]. Finally, in patients who have

recurrent AMI, the proportion of patients receiving beta-blockers has been shown to be >50% [18]. The study conducted by Javed et.al shows that the best predictor of patients receiving beta-blockers at 30 days post-AMI was discharge prescription of these drugs. This underscores the importance of careful discharge planning[19]. It is possible that the patients discharged on beta-blockers were already on them during the hospital stay and constituted a select group of patients tolerant to these medications. However, both patients and the family members are likely to be responsive to educational opportunity regarding the importance of secondary prevention measures post-AMI, and may be more motivated to comply with the recommendations given during the acute phase[20,21]. Moreover, physicians may be more likely to continue a prescription on an outpatient basis as compared to remembering and initiating a new treatment.

The current study mainly aims in the following criteria in order to improve the patient outcome

1. To discuss the importance of and recommendations for secondary prevention of AMI with a beta-blocker
2. To determine the medication adherence and common barrier.
3. To develop methods to educate the patients to increase adherence and improve patient outcome.

METHODOLOGY

It is an observational, prospective, non-interventional study in which data on 320 patients surviving acute MI over 8 months was collected, factors associated with filling a beta-blocker prescription within 30 days post discharge and the proportion of patients who were not discharged on beta-blockers, who filled prescriptions for them by 30, 120, 240 days of post-AMI discharge were assessed. The study was conducted during dec-2010 to july-2011, a 8 months duration at Krishna Institute of Medical Sciences, a tertiary care hospital in Secunderabad.

RESULTS

Patient Characteristics Associated With Time to First Beta-Blocker Prescription in the First 30 Days Post-Discharge.

Table 1: *Tables for patients who were discharged on Beta-blockers*

Patient characteristic	Overall number of patients N=320 N(%)
Age in (yrs)	
<65	114 (35%)
65-74	80 (25%)
>75	126 (39%)
Gender	
Male	183 (57%)
Female	137 (43%)
Discharged on Beta-blockers	
Yes	205 (64%)
No	115 (36%)

Table 1A: Patient characteristics and Beta-blocker adherence among patients who were discharged on beta-blockers after first 30 days

Day 30		
Patient characteristic	N	NBB; N (%)
Age in (yrs)	205	160 (78%)
<65	86	64 (75%)
65-74	47	25 (53%)
>75	92	71 (77%)
Gender		
Male	142	86 (61%)
Female	63	74 (85%)
Discharge status		
Eligible /non-ideal	167	114 (68%)
Ideal	38	26 (68%)
Where N=number of prescriptions received after 30 days: NBB=number of prescriptions for beta-blockers; N(%)=Percentage of prescriptions for beta-blockers		

Table 1B: Patient characteristics and Beta-blocker adherence among patients who were discharged on beta-blockers after 120 days

Day120		
Patient characteristic	N	NBB; N (%)
Age in (yrs)	180	92 (51%)
<65	68	34 (50%)
65-74	34	23 (68%)
>75	78	35 (45%)

Gender		
Male	112	57 (51%)
Female	68	35 (52%)
Discharge status		
Eligible /non-ideal	104	63 (60%)
Ideal	76	29 (38%)
Where N=number of prescriptions received after 120 days: NBB=number of prescriptions for beta-blockers; N(%)=Percentage of prescriptions for beta-blockers		

Table 1C: Patient characteristics and Beta-blocker adherence among patients who were discharged on beta-blockers after 240 days

Day 240		
Patient characteristic	N	NBB; N (%)
Age in (yrs)	164	84 (51%)
<65	62	29 (46%)
65-74	21	20 (95%)
>75	81	35 (43%)
Gender		
Male	97	53 (54%)
Female	67	31 (46%)
Discharge status		
Eligible /non-ideal	87	54 (62%)
Ideal	77	30 (39%)
Where N=number of prescriptions received after 240 days: NBB=number of prescriptions for beta-blockers; N(%)=Percentage of prescriptions for beta-blockers		

Table 2A: *Tables for patients who were not discharged on Beta-blockers* **Patient characteristics and Beta-blocker adherence among patients who were not discharged on beta-blockers after first 30 days**

Day 30		
Patient characteristic	N	NBB; N (%)
Age in (yrs)	115	32 (27%)
<65	52	14 (27%)
65-74	31	08 (26%)
>75	32	10 (31%)
Gender		
Male	72	26 (36%)
Female	43	06 (14%)
Where N=number of prescriptions received after 30 days: NBB=number of prescriptions for beta-blockers; N(%)=Percentage of prescriptions for beta-blockers		

Table 2B: Patient characteristics and Beta-blocker adherence among patients who were not discharged on beta-blockers after 120 days

Day 120		
Patient characteristic	N	NBB; N (%)
Age in (yrs)	103	29 (28%)
<65	43	16 (37%)
65-74	27	06 (22%)
>75	33	07 (21%)
Gender		
Male	67	19 (28%)
Female	36	10 (28%)
Where N=number of prescriptions received after 120 days: NBB=number of prescriptions for beta-blockers; N(%)=Percentage of prescriptions for beta-blockers		

Table 2C: Patient characteristics and Beta-blocker adherence among patients who were not discharged on beta-blockers after 240 days

Day 240		
Patient characteristic	N	NBB; N (%)
Age in (yrs)	96	24 (25%)
<65	32	12 (37%)
65-74	24	03 (13%)
>75	40	09 (23%)
Gender		
Male	61	16 (26%)
Female	35	08 (23%)
Where N=number of prescriptions received after 240 days: NBB=number of prescriptions for beta-blockers; N(%)=Percentage of prescriptions for beta-blockers		
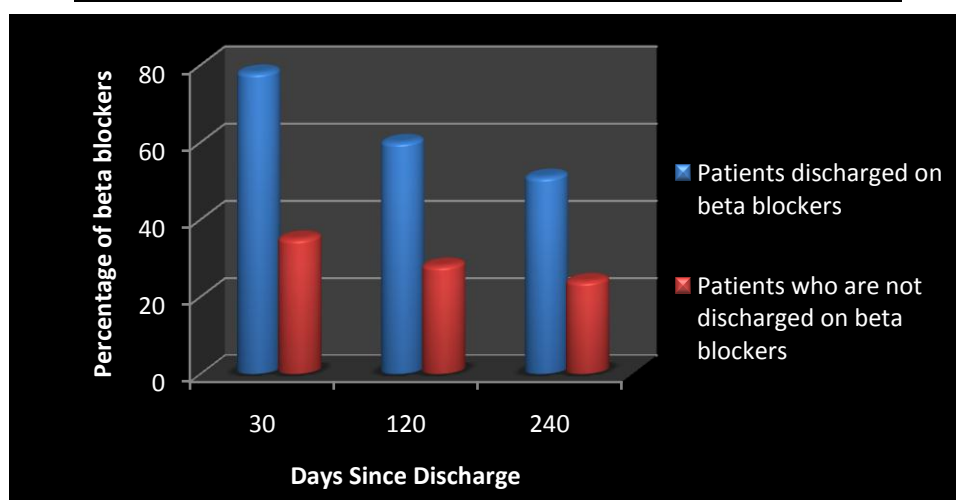
Figure 1: Graphical represent of % of beta blocker users among patients who are discharged on beta blockers and discharged without beta blockers

The data which was collected from the patients was tabulated. 2 different table's tables 1a, 1b, 1c and 2a, 2b, 2c represent Patient characteristics and Beta-blocker adherence among patients who were and were not discharged on beta-blockers respectively. Out of 205 patients who were discharged on beta-blocker therapy, only 160 prescriptions were received during the first 30 days after discharge. This number had declined to 92, 84 after 120 and 240 days respectively. The decreased number of prescriptions was also seen in patients who were not discharged on beta-blockers.the number of prescriptions on beta-blockers received during the first 30 days were 30 out of 115 total patients who were discharged without a beta-blocker, this number had further decreased to 29, 24 after 120 and 240 days respectively.

DISCUSSION

8 months observational, prospective, non-interventional study was carried out at KIMS hospital and the data was collected from both the inpatient, outpatient pharmacies of the hospital. A patient follow up was done by contacting them in mobile and recommending them to fill their prescriptions on time. The total number of patients with post-MI selected for this study were 320 (183 males and 137 females) among these patients there were 205 patients discharged with prescription on beta-blocker and 115 were discharged without a prescription on beta-blockers. For patients who are not discharged on beta-blockers after AMI, there is a possibility that these drugs may be started as outpatients. This study demonstrates a significant decline in the use of beta-blockers after AMI discharge from the hospital. Over all only 64% of the patients were discharged on beta-blockers. During the first 30 days after discharge, another 14% of these patients had not filled a beta-blocker prescription, and by 120 days, a total of 35% of patients discharged on beta-blockers did not have a current prescription. Even among those patients classified as ideal for beta-blocker therapy but not discharged on them, the rate of new outpatient prescription was very low; these findings strongly suggest that further quality improvement initiatives need to address drug compliance in the outpatient arena.

CONCLUSION

In addition to appropriate dosing and monitoring, patient education is essential to maximize efficacy of therapy. On one hand the number of patients discharged with prescription on beta-blockers had decreased, on the other hand those patients who were not discharged on beta-blockers filled their prescription for beta-blockers but the reason for the intake of beta-blockers by the patients was mainly for other disorders like Hypertension, migraine

prophylaxis, thyroid storm, anxiety etc rather than for secondary prevention of stroke, this clearly indicates that there is a strong need of pharmacist to motivate the post –MI patients to use beta-blockers regularly unless contraindicated, by providing verbal counselling, giving the patient written information about the importance of beta-blockers to prevent further morbidity and mortality among post-MI patients.

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