Rate of Heart failure guideline adherence in a tertiary care center in India after accounting for the therapeutic contraindications.

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Abstract

Introduction

Chronic heart failure (CHF) is a condition characterized by unpleasant symptoms, high mortality, and recurrent and lengthy hospitalizations. This study was done to determine the frequency of use of HF guideline recommended therapies in India.

Methods

The study was carried out in the department of cardiology at SMS Medical College and Hospital, Jaipur, Rajasthan. Patients with LVEF ≤45% on a recent transthoracic echocardiogram were selected. Adherence to each recommended medication class was defined as in hospital administration or outpatient prescription of at least 1 drug within the medication class prior to the recruitment date.

Results

A total of 308 patients were selected for this study. 223 (72.4%) patients were males and the mean age of all the patients was 51.5 ±13.5 years. Most of the patients (49.3%) were in NYHA class 2 at the time of recruitment and 29.2% were in NYHA class 3. Only 22 (7.1%) were in NYHA class 4.

After excluding the patients with contraindications, it was seen that 103 (46.6%) were receiving all the therapies recommended by the heart failure guidelines. Beta blockers and ACE-I's/ARB's were being prescribed to 88.8% and 96.5% respectively. Aldosterone antagonists were being prescribed to 73 (71.5%) patients after accounting for the contraindications. Guideline adherence for CRT and ICD was 40% and 9.3% respectively after making adjustments for patients with contraindications.

Conclusion

This study shows that percentage of patients receiving all guideline recommended therapies is lower in India as compared to the published western data. Fewer patients receiving CRT's and ICD's resulted in this difference and were the major contributors to this low adherence rates. Rates of guideline adherence for ACE-I's/ARB's, beta-blockers and aldosterone antagonists in our study was similar to the western data.
guideline adherence in that population.

This study was done to determine the frequency of use of HF guideline recommended therapies in a developing country like India. We have also accounted for the presence of therapeutic contraindications to explain the lack of adherence. After accounting for the contraindications, we have calculated the true frequency of use of HF guideline-recommended therapies.

Methods

The study was carried out in the department of cardiology at SMS Medical College and Hospital, Jaipur, Rajasthan. Patients of primary or secondary HF attending the cardiology outpatient department and those admitted in the department of cardiology between the period of January 2013 to December 2013 were screened. Patients with LVEF ≤ 45% on a recent transthoracic echocardiogram were selected. A predefined abstraction procedure was used to maximize reproducibility according to which patients were recruited on the first day and later asked to come back on a prespecified date with all previous documents to get maximum information. A data collection sheet was used to standardize the data collection. Demographic, clinical data and New York Heart Association (NYHA) class were recorded for each patient at the time of recruitment. Previous patient records and prescriptions were analyzed for medication use, ICD or CRT implantation, laboratory values, patient’s refusal of therapy, electrocardiographic and echocardiographic data. Adherence to each recommended medication class was defined as in hospital administration or outpatient prescription of at least 1 drug within the medication class prior to the recruitment date. Adherence to ICD or CRT therapy recommendations was defined as implantation of an ICD or CRT device on or before the date of recruitment. Guideline adherence was defined as use of all therapies for which a patient was eligible based on the 2009 Focused Update to the ACC/AHA 2005 Guidelines for the Diagnosis and Management of HF in Adults2 (Table 1). All patients who did not receive a recommended therapy were screened for a possible contraindication to the therapy (Table 2). If any contraindication was found in the medical record, the patient was deemed ineligible for the therapy.

Characteristics of patients were described using the mean for continuous variables like age, LVEF and using percentages for categorical variables like hypertension, gender, hyperlipidaemia, diabetes mellitus, NYHA class etc. Adherence to each guideline-indicated therapy (β-blocker, ACE inhibitor, aldosterone antagonist, anticoagulation for atrial fibrillation, ICD implantation, and CRT implantation) was calculated in percentages. The study design was approved by the SMS Medical College and Hospital ethical committee. The authors are solely responsible for the design of the study, analysis and the final manuscript of this study.

Results

A total of 308 patients were selected for this study. 223 (72.4%) patients were males and the mean age of all the patients was 51.5 ± 13.5 years (Table 3). A large majority of the patients had a history of prior MI (69.4%), whereas history of diabetes and cerebrovascular disease was present in 74 (24%) and 20 (6.4%) patients respectively. Documented atrial fibrillation was present in 46 (14.9%) patients and a QRS duration of >120 msec was present in 72 (23.3%) patients. Most of the patients (49.3%) were in NYHA class 2 at the time of recruitment and 29.2% were in NYHA class 3. Only 22 (7.1%) were in NYHA class 4. The mean ejection fraction of all the patients recruited was 31.6 ± 7.8%.

Out of all the patients selected for the study, 103 (33.4%) were receiving all therapies recommended by the heart failure guidelines (Table 4). Beta blockers were being prescribed to 264 (85.7%) patients whereas ACE-I’s/ARB’s were being given to 284 (92.2%) of all the patients. Aldosterone antagonist prescription was being prescribed to 73 (65.7%) of the 111 patients eligible for this therapy. Anticoagulation therapy was being given to only 4 (8.6%) patients out of the 46 patients who had documented evidence of atrial fibrillation in addition to left ventricular dysfunction. Digoxin was being given to 40 (86.9%) of the patients who were in atrial fibrillation. Implantable cardioverter defibrillator implantation was performed in 12 (6.8%) of 174 patients with an EF ≤ 35% and NYHA class II or III HF or EF ≤ 30% and prior myocardial infarction (MI). Cardiac resynchronization therapy implantation was performed in 14 (30.4%) of 46 patients with NYHA class III or IV HF, QRS > 120 ms, and EF ≤ 35%.

Contraindications to the use of beta blockers were present in 11 (3.5%) patients and the most common of which was severe COPD. Increased creatinine levels and pregnancy were two of the most common reasons for not prescribing ACE-I’s and ARB’s in 14 (4.5%) of the patients. Aldosterone antagonists were contraindicated in 9 (8.1%) of the 111 patients who were otherwise eligible for this therapy. Only 2 (4.3%)
patients of the 46 patients with AF had a contraindication to the use of anticoagulation. Patient refusal was the most common reason in patients not undergoing CRT (23.9%) and ICD (25.8%) therapy when it was recommended.

After excluding the patients with contraindications, it was seen that 103 (46.6%) were receiving all the therapies recommended by the heart failure guidelines. Beta blockers and ACE-I’s/ARB’s were being prescribed to 88.8% and 96.5% respectively. Aldosterone antagonists were being prescribed to 73 (71.5%) patients after accounting for the contraindications. Guideline adherence for CRT and ICD increased to 40% and 9.3% respectively after making adjustments for patients with contraindications.

**Discussion**

This is the first report on utilization of heart failure therapies from India to the best of our knowledge. Before accounting for the contraindications we found that 33.4% of our patients were receiving care that was completely adherent to the ACC/AHA HF guideline recommendations. After accounting for contraindications, we found that 46.6% of our patients were receiving therapy according to all applicable guidelines. Even then, this figure is much lower than that reported in the western literature. Cardiology clinics in the developed countries report a corrected guideline adherence rates of as high as 72% in some studies. Guideline adherence in relation to CRT’s was seen to be 40% as compared to 59% in the western literature. This data clearly shows how fewer patients receiving CRT’s and ICD’s are mainly responsible for the low percentage of patients receiving all guideline recommended therapies.

Financial constraints are a major factor responsible for these low rates CRT’s and ICD’s in developing patients.

By the time we had finished this study, the 2013 ACCF/AHA guidelines for the management of heart failure had also been published. The major difference is mainly in the guidelines for anticoagulation, CRT implantation and aldosterone antagonists. According to the new guidelines anticoagulation is a class I indication only in patients with chronic HF with permanent/persistent/paroxysmal AF and an additional risk factor for cardioembolic stroke (history of hypertension, diabetes mellitus, previous stroke or transient ischemic attack, or ≥75 years of age) should receive chronic anticoagulant therapy. In patients without a risk factor, anticoagulation is a class IIa indication. CRT according to the new guidelines is indicated for patients who have LVEF of 35% or less, sinus rhythm, left bundle-branch block (LBBB) with a QRS duration of 150 ms or greater, and NYHA class II as well. This is a major change as compared to the 2005 guidelines in which class II patients were not considered for CRT implantation. Similarly aldosterone antagonists in patients with NYHA class II–IV with LVEF ≤35% is now a class I indication.

**Conclusions**

This study shows that percentage of patients receiving all guideline recommended therapies is lower in a developing country like India as compared to the published western data. Fewer patients receiving CRT’s and ICD’s resulted in this difference and were the major contributors to this low adherence rates. Rates of guideline adherence for ACE-I’s/ARB’s, beta-blockers and aldosterone antagonists in our study was similar to the western data. Accounting for contraindications gives a more accurate estimation of
guideline adherence rates. To improve the rates of guideline adherence, we need to work on new techniques that may assist providers in their effort to provide guideline adherent care to patients with heart failure. Free distribution of medicines by the government has immensely helped the physicians in providing guideline recommended medical therapy. Providing CRT's and ICD's at a subsidized cost to the poor is needed to improve the percentage of patients who receive these therapies in a developing nation like India

References


Role of authors

HR was involved in design of study, collection of data, literature review, preparation and finalizing the manuscript. RB, MR and SA were involved in literature review, preparation and finalizing the manuscript.