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Original Article

Comparison of Indian subcontinent and Middle East acute heart failure patients: Results from the Gulf Acute Heart Failure Registry



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ABSTRACT

Objective: To compare Middle East Arabs and Indian subcontinent acute heart failure (AHF) patients.

Methods: AHF patients admitted from February 14, 2012 to November 14, 2012 in 47 hospitals among 7 Middle East countries.

Results: The Middle Eastern Arab group (4157) was older (60 vs. 54 years), with high prevalence of coronary artery disease (48% vs. 37%), valvular heart disease (14% vs. 7%), atrial fibrillation (12% vs. 7%), and khat chewing (21% vs. 1%). Indian subcontinent patients (382) were more likely to be smokers (36% vs. 21%), alcohol consumers (11% vs. 2%), diabetic (56% vs. 49%) with high prevalence of AHF with reduced ejection fraction (76% vs. 65%), and with acute coronary syndrome (46% vs. 26%). In-hospital mortality was 6.5% with no difference, but 3-month and 12-month mortalities were significantly high among Middle East Arabs, (13.7% vs. 7.6%) and (22.8% vs. 17.1%), respectively.

Conclusions: AHF patients from this region are a decade younger than Western patients with high prevalence of ischemic heart disease, diabetes mellitus, and AHF with reduced ejection fraction.

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There is an urgent need to control risk factors among both groups, as well as the need for setting up heart failure clinics for better postdischarge management.

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1. Introduction

Many studies have observed worse prognosis among most migrant groups or minorities compared to local population following acute heart failure (AHF) admission.¹⁻³ In addition, it is noted that people of South Asian (Indian subcontinent) descent have a high prevalence of comorbidities, which lead to increased occurrence of heart failure (HF) among these population.⁴⁻⁷ Furthermore, the etiology and management of ethnic minority HF patients may vary. Hence, in 2010, the Canadian Cardiovascular Society published guidelines on HF in ethnic minority populations in Canada.⁸ Presently, there is a significant percentage of South Asian population residing in the Middle East, but little is known about the etiology, presentation, management, and prognosis for this population compared to the Middle East population. In a previous retrospective single-center study from Qatar, it was observed that HF patients in the Middle East present at relatively younger age regardless of ethnicity and they tend to have more comorbidities.⁹ Gulf CARE (aCute heArT failuRe rEgistry) is a prospective, multinational, multicenter registry of patients admitted with the diagnosis of AHF to 47 hospitals in 7 Middle Eastern countries.¹⁰ The aim of this paper is to compare clinical characteristics, management, and outcomes between Middle East Arabs and Indian subcontinent AHF patients enrolled in the Gulf CARE study.

2. Methods

Gulf CARE registry design, methodology, and hospital characteristics have been previously described in detail.¹⁰ Briefly, patients admitted to the participating hospitals between February 14, 2012 and November 14th, 2012 were recruited. Included patients were males and females above 18 year of age with admission diagnosis of AHF. Middle Eastern Arabs included those from Oman, Yemen, Saudi Arabia, Kuwait, United Arab Emirates, Qatar, and Bahrain, while those from the Indian subcontinent included nationals from India, Pakistan, Afghanistan, Bangladesh, Sri Lanka, and Nepal. Indian subcontinent ethnicity was determined by self-report, the gold standard, as well as identifying country of birth from passport and other national identity documents. Online data were captured, which included demographic data, comorbidities, risk factors, precipitating factors, clinical presentation, investigations, medication history and their dosages, in-hospital management, and outcome. Follow-up of patients at 3 months and 1 year was performed. Telephonic follow-up was done at 3 months and either telephonic or clinic visit at 1 year. Institutional or national ethical committee or review board approvals were obtained in each

of the seven participating countries. The study is registered at clinicaltrials.gov (NCT01467973).

AHF was defined based on ESC criteria.¹¹ AHF was further classified as either acute decompensated chronic heart failure (ADCHF) or new-onset acute heart failure (*de novo* AHF) based on ESC guidelines.¹¹ ADCHF was defined as worsening of HF in patients with a previous diagnosis or hospitalization for HF. New-onset AHF (*de novo* AHF) was defined as AHF in patients with no prior history of HF. Definitions of data variables in the CRF were based on the ESC guidelines of 2008 and the ACC clinical data standards of 2005.^{11,12} Khat chewing was defined as chewing khat plant/leaves (*Catha edulis* containing cathionine, an amphetamine-like stimulant) within 1 month of the index admission. Idiopathic dilated cardiomyopathy was defined as a myocardial disorder in which the heart muscle is structurally and functionally abnormal (in the absence of coronary artery disease (CAD), hypertension, valvular disease, or congenital heart disease sufficient to cause the observed myocardial abnormality). HF with preserved ejection fraction (HFpEF) was defined as presence of symptoms and/or signs of HF and a left ventricular ejection fraction (LVEF) >40%.

2.1. Statistical analyses

Descriptive statistics were used to summarize the data. For categorical variables, frequencies and percentages were reported and differences between groups were analyzed using Pearson's chi-square test (or Fisher's exact test for cells <5). For continuous variables, mean and standard deviation were used to summarize the data while analysis was done using Student's t-test. For those variables that were not normally distributed, median and interquartile ranges (25th and 75th percentiles) were used to present the data while comparative analysis was performed using the nonparametric Mann-Whitney test. An *a priori* two-tailed level of significance was set at 0.05. Statistical analyses were conducted using STATA version 13.1 (STATA Corporation, College Station, TX, USA).

3. Results

A total of 47 hospitals in 7 Arabian Gulf states (Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, United Arab Emirates, and Yemen) participated in the Gulf CARE project, with a total of 5005 patients enrolled. However, only 4539 met the inclusion criteria of Gulf citizens and those from the Indian subcontinent accounting for almost 92% ($n = 4157$) and 8% ($n = 382$), respectively (Table 1). The overall mean age of the cohort was 59 ± 15 years and 62% ($n = 2817$) were males. More than half of the patients (55%, $n = 2480$) presented with ADCHF while the rest (45%; $n = 2059$) had *de novo* AHF. Cardiologists were the main healthcare provider for 70% ($n = 3199$) of the patients. Comorbid conditions were common, particularly hypertension

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