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Emergency department presentation and management of patients with acute decompensated heart failure at the Baghdad Teaching Hospital

Ali Jalil Al-Saigh[1,*], Ihab Saeed Ahmed[2], Sally Saad Bash[3], Muataz Fawzi Hussein[2], Mohamed AbdElrahman[4], Rafal J. Al-Saigh[5]

[1]Al-Hilla Teaching Hospital, Babel Health Office, Babil Province, Iraq
[2]Baghdad Teaching Hospital, Baghdad Medical City, Baghdad, Iraq
[3]Babel Health Office, Babil Province, Iraq
[4]College of Pharmacy, Al-Mustaqbal University, Hillah, Iraq
[5]Department of Clinical Laboratory Sciences, College of Pharmacy, University of Babylon, Hillah, Iraq

***Corresponding author:** Ali Jalil Al-Saigh, Al-Hilla Teaching Hospital, Babel Health Office, Babil Province, Iraq
Tel.: +964-(0)7706018105
E-mail: alijelil@gmail.com

Abstract

Acute decompensated heart failure (ADHF) is a leading cause of hospital admission and many factors are known to precipitate decompensation. We aimed to assess the decompensating factors of heart failure and the management of patients admitted to the emergency department (ED). A total of 107 patients were examined, all diagnosed with ADHF in the ED of the Baghdad Teaching Hospital, from June 2017 to December 2017, and presenting with decompensation (pulmonary oedema, peripheral oedema, and fatigue). The mean patient age was 62.5 ± 9.8 years (range: 43–85 years); the majority of them were in their 7th decade (37.4%), and men were slightly more than women. Hypertension was the most commonly associated comorbidity (68.2%), followed by diabetes mellitus (57.9%), coronary artery disease (51.4%), dyslipidaemia (37.4%), arrhythmia (28%), and chronic obstructive pulmonary disease / asthma (23.4%). The most common presentation was pulmonary oedema (88.8%) followed by peripheral oedema (61.7%), and fatigue (26.2%). Uncontrolled hypertension was the most common precipitating condition for decompensation (58.9%), followed by infection (39.3%), acute coronary syndrome (31.8%), arrhythmia (27.1%), non-compliance (11.2%), and anaemia (2.8%). The majority of the admitted patients were managed with intravenously-administered (i.v.) diuretics (92.5%) that may have been combined with oxygen therapy (63.6%), antibiotics (58.9%), β-blockers (50.5%), nitroglycerin (40.2%), i.v. fluids (38.3%), and/or digoxin (19.6%).

KEYWORDS

acute decompensated heart failure, uncontrolled hypertension, pulmonary oedema, peripheral oedema, fatigue

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1. INTRODUCTION

Acute decompensated heart failure (ADHF) often occurs in patients with preexisting heart failure,

and presents with exacerbation of dyspnoea, oedema, and/or fatigue that requires urgent medical treatment at the emergency department (ED), thus mandating its management with intravenously-administered (i.v.) medication (e.g., diuretics) and respiratory support in the form of oxygen (O_2) therapy [1]. Several factors can contribute to the ADHF worsening, leading to decompensation. Excessive fluid accumulation in the body can strain the heart, leading to a worsening of the symptoms of heart failure. Monitoring fluid intake and output, assessing peripheral oedema, and evaluating the signs of pulmonary congestion are crucial in managing ADHF patients in the ED. Failure to adhere to prescribed medications, such as diuretics can exacerbate ADHF symptoms and contribute to decompensation [2]. It is essential to assess medication compliance and optimize medication regimens in the ED, as medication adherence may reduce the ADHF symptoms, high hospitalization, and mortality [3]. Conditions such as hypertension, diabetes, infections, and renal dysfunction can worsen ADHF and increase the risk of decompensation. Identifying and managing comorbidities are important aspects of the ADHF management in the ED. Infection triggers an immune response and systemic inflammation, which is associated with the worsening of the ADHF outcomes and can contribute to myocardial dysfunction [4]. Arrhythmias, such as atrial fibrillation (AF) or ventricular tachycardia, can precipitate or exacerbate ADHF episodes. Prompt recognition and treatment of arrhythmias are critical in preventing decompensation in ADHF patients presenting to the ED. Ischemia in the from of an acute coronary syndrome (CAS) or myocardial ischemia can also lead to ADHF decompensation. Evaluating for signs and symptoms of myocardial ischemia and initiating appropriate interventions, such as the administration of an antiplatelet therapy or revascularization, are crucial in the ADHF management in the ED [5]. Other non-cardiac conditions such as pulmonary embolism, chronic obstructive pulmonary disease (COPD), or asthma can also exacerbate the ADHF symptoms [6]. The aim of this study was to identify the decompensating factors of heart failure in patients with known history of heart failure that were admitted in the ED, and discuss the management of them with available therapies at the Baghdad Teaching Hospital (Iraq).

2. PATIENTS AND METHODS

General: This observational cross sectional study was conducted at the Baghdad Teaching Hospital, Baghdad Medical City, Baghdad, Iraq, from June 2017 to December 2017, and was carried on 107 patients that were admitted to the ED. Of them, 50 were women and 57 were men, with their age ranging from 43 to 85 years. The patients presented with ADHF and were interviewed after the management of the presenting symptoms with available therapies. All patients were subjected to full history, physical examination, and investigations at presentation with a direct interview inquiring about their age, sex, history of hypertension, history of diabetes mellitus, history of CAS, history of dyslipidaemia, history of stroke, history of AF, as well as history of COPD and/or asthma. Furthermore, we recorded the medication to the patient given at the ED (diuretics i.v., O_2 therapy, antibiotics, β-blockers, nitroglycerin, fluids i.v., and digoxin).

Inclusion criteria: Known case of heart failure in their medical history and previously confirming diagnosis through a chest X-ray or multiple attacks of decompensation symptoms.

Exclusion criteria: Unconfirmed diagnosis of heart failure.

Ethics statement: The study was carried out in compliance with the Declaration of Helsinki principles and was approved by the Scientific Ethics Committee of the Department of Emergency Medicine, Iraqi Board for Medical Specialities, Baghdad. The study was carried out after gaining their verbal consent from all participated patients; the latter were informed that their non-participation or withdrawal from the study would have no impact on the medical care they received.

Statistical analysis: All continuous data were presented as mean ± standard deviation, while categorical variables were presented in the form of numbers and percentages.

3. RESULTS

In the current study, the mean age of the patients was 62.5 ± 9.8 years (ranging from 43 to 85 years), with 37.4% of the patients' age being 60–69 years, and 31.8% of them being 50–59 years. Men were slightly more (53.3%) than women (46.7%), the mean duration of the heart failure was 8.2 ± 2.4 years, and 43.9% of the patients were smokers. Pulmonary oedema was the most common presentation (88.8%), followed by peripheral oedema (61.7%), and fatigue (26.2%). Uncontrolled hypertension was the most common precipitating condition for decompensation, followed by infection (respiratory tract infection or urinary tract infection), CAS, arrhythmia, non-compliance, and anaemia (Table 1). Regarding the treatment at ED, 92.5% of the patients were given diuretics (i.v.), 63.6% were administered an O_2 therapy, while 58.9% were treated with antibiotics, 50.5% with β-blockers, 40.2% with nitroglycerin, 38.3% with fluids (i.v.), and only 19.6% with digoxin (Table 1).

Table 1. Data collected from patients with acute decompensated heart failure (ADHF) presenting at the emergency department (ED) of the Baghdad Teaching Hospital (Iraq) between June 2017 and December 2017. Notes: *, uncontrolled hypertension: systolic blood pressure ≥140 mmHg and/or diastolic blood pressure ≥90 mmHg; **, non-compliance with medication, diet or fluid restrictions. Abbreviations used: CAS, coronary artery syndrome; COPD: chronic obstructive pulmonary disease; i.v., intravenously-administered; O_2, oxygen; RTI, respiratory tract infection; UTI, urinary tract infection.

General Data of Patients (n=107)					
Age (in years)					
<50	**50–59**	**60–69**	**70–79**	**≥80**	
5 (4.7%)	34 (31.8%)	40 (37.4%)	21 (19.6%)	7 (6.5%)	
Sex					
Male		**Female**			
57 (53.3%)		50 (46.7%)			
Co-morbid conditions associated with ADHF					
Hypertension	**CAS**	**Dyslipidaemia**	**Arrhythmia**	**Diabetes**	**COPD / Asthma**
73 (68.2%)	55 (51.4%)	40 (37.4%)	30 (28.0%)	62 (57.9%)	25 (23.4%)
Related to heart failure (mean ± SD; range)					
Duration of heart failure (in years)		**Number of attacks**			
8.2 ± 2.4 (1.0–12)		8.9 ± 5.6 (2–50)			
Clinical presentations to the ED					
Pulmonary oedema		**Peripheral oedema**		**Fatigue**	
95 (88.8%)		66 (61.7%)		28 (26.2%)	
Precipitating factors of ADHF					
Uncontrolled hypertension*	**Infection (RTI or UTI)**	**Acute coronary syndrome**	**Arrhythmia**	**Non-compliance****	**Anaemia**
63 (58.9%)	42 (39.3%)	34 (31.8%)	29 (27.1%)	12 (11.2%)	3 (2.8%)
Drugs used in treatment of ADHF patients at ED					
Diuretics (i.v.)	**O_2 therapy**	**Antibiotics (i.v.)**	**β-Blockers**	**Nitroglycerin**	**Fluids (i.v.)**	**Digoxin**
99 (92.5%)	68 (63.6%)	63 (58.9%)	54 (50.5%)	43 (40.2%)	41 (38.3%)	21 (19.6%)

4. DISCUSSION

Patients with ADHF resulting from uncontrolled hypertension can usually be readily stabilized in the hospital with blood pressure control within a relatively short length of stay, and a lower risk of adverse near-term outcomes; however it remains the most common cause of decompensation. Infections, such as pulmonary infections, increase metabolic demands which are common in patients with heart failure, may cause hypoxia, and are associated with worse outcomes [7]. Patient adherence to dietary restrictions and evidence-based medication is a cornerstone of heart failure management, while non-adherence to medications has been associated with increased risk of hospitalization and mortality in outpatients with chronic heart failure [8]. Patients with non-adherence to medications or diet are likely to be admitted with excessive sodium retention, which can be a leading decompensation factor [9]. These patients may more readily achieve compensation in response to salt restriction, adjustment of diuretics, and provision of medications during the inpatient hospitalization. It should be noted that patients with non-adherence to medications or diet as an admission precipitant were at high adjusted risk of a 60- to 90-day post-discharge mortality and of death/re-

hospitalisation similar to the overall heart failure population [10]. Patients identified as nonadherent to medications would be expected to be counselled during the index hospitalization regarding the importance of adherence to their medical regimen and, thus, may be less likely, at least in the short term, to repeat the medication nonadherence that precipitated a recent heart failure hospitalization. It should also be emphasized that the use of evidence-based heart failure medications in eligible patients at discharge is strongly associated with improved post-discharge outcomes [7]. Based on the above results, our study has shed more light on the demographics, common comorbidities, clinical presentations, and factors that contribute to the clinical deterioration of ADHF patients in Iraq.

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CONFLICT OF INTEREST STATEMENT
The authors declare no conflicts of interest.

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