

IMPACT OF DIABETES MELLITUS ON THE OUCOME OF HEART FAILURE PATIENTS WITH REDUCED EJECTION FRACTION

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INTRODUCTION

Diabetes and heart failure are closely related, patients with diabetes have an increased risk of developing heart failure and those with heart failure are at higher risk for DM also antidiabetic medications increase the risk of mortality and hospitalisation for heart failure in patients with and without previous heart failure. When the two diseases are considered individually, heart failure has a much poorer prognosis than diabetes mellitus; so heart failure has to be a priority for treatment in patients coming with the two conditions, and the diabetic patient with heart failure should be managed by the heart failure team.

prevalence of HF in diabetes mellitus is four-times higher than that of the general population, suggesting a pathogenetic role of diabetes in heart failure. This pathogenetic role is also suggested by the fact that patients with diabetes and without heart failure have an increased risk of developing heart failure compared with a matched population (29 versus 18 %, respectively).

The EMPA-REG outcomes trial, empagliflozin reduced the composite outcome of cardiovascular death, nonfatal myocardial infarction, or nonfatal stroke in patients with diabetes and established cardiovascular disease.

In the DECLARE-TIMI 58 trial, dapagliflozin reduced (HF) hospitalizations in patients with diabetes and established/at high risk of cardiovascular disease.

A US health maintenance study demonstrated that every 1 % increase in baseline glycosylated hemoglobin level correlated with a 15 % increased risk of developing HF, poor glycemic control was associated with an increased risk of HF.

AIM OF THE WORK

The aim of this study was to evaluate the impact of Diabetes Mellitus on the outcome (rehospitalisation and mortality) of heart failure Patients with reduced ejection fraction.

PATIENTS AND METHODS

The study included hospitalized 200 heart failure patients with reduced ejection fraction, the patients were divided into two groups, group1 diabetic patients with HF with reduced EF and group 2 non diabetic with HF with reduced EF.

Inclusion criteria: 100 Patients admitted with type 2 diabetes mellitus (DM2) and 100 patients without DM TYPE 2. Patients with LV EF ≤ 40 % (HFrEF) Age ≥ 18 years .

Exclusion criteria:

- 1- Cardiogenic shock on admission.
- 2- Established systemic inflammatory disorder.
- 3- Liver disease.
- 4-Severe chronic kidney disease (CKD) (Glomerular filtration rate (GFR) ≤ 30 mL/min/1.73m².

5- Coronary artery bypasses graft (CABG) or percutaneous coronary intervention (PCI) patients.

6- Previous history acute coronary syndrome (ACS) within last 6 monthsts

RESULTS

6 months follow up

NYHA class: NYHA class II was 30 % (n=21) in group (1) patients compared to 44.2 % (n=42) in the other group while NYHA class III was 41 % (n=41) in group (1) patients Compared to 55.7% (n=53) in group (2) patients. NYHA class IV group included 11.4%patients (8) in group (1) only.

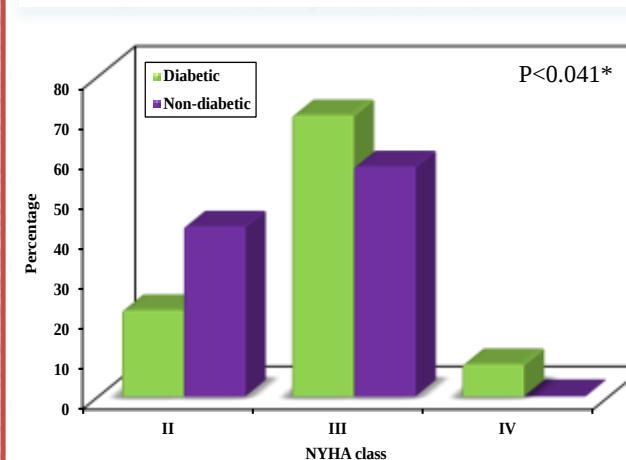


Figure1:Comparison between the two studied groups according to NYHA class (6 month follow up).

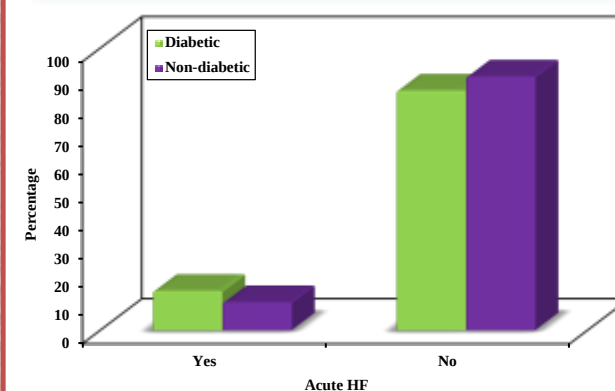


Figure3: Comparison between the two studied groups according to Acute HF (6 month follow up)

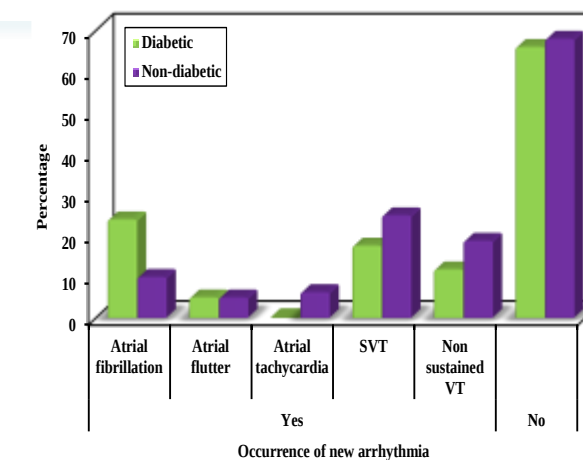


Figure2: Occurrence of new arrhythmia

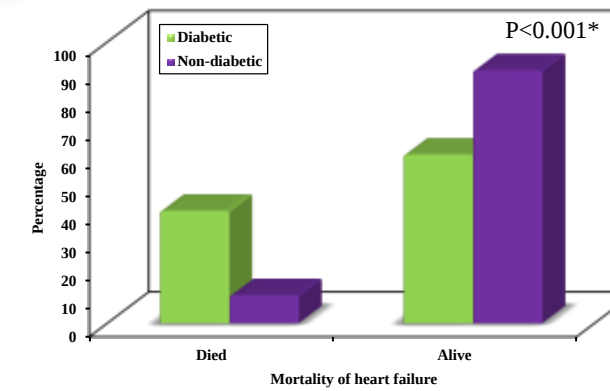


Figure4: Comparison between the two studied groups according to mortality of heart failure (During hospital stay and 6 months follow up)

- Need for rehospitalization

Group 1 was n (40) 57 % and group 2 was n (30) 31.5%

- Occurrence of new arrhythmia

In group (1) patients 48.5 % (n=34) experienced new arrhythmia during follow up compared to 33% (n=32) in group(2) with no statistically significant difference. The most common arrhythmia was atrial fibrillation representing 70%, n (24) in group(1) and 31% n (10) group(2) other types of arrhythmia included atrial flutter representing 14.7% (n=5), 15.6%(n=5), atrial tachycardia representing 0 % (n=0), 18.7%(n=6), SVT representing 8.8 (n=3), 12.5 (n=4), non-sustained VT representing 5.8 (n=2), 9.3 % (n=3) in group(1) and (2) respectively with no statistically significant difference between the two groups.

Acute HF (decompensation). Was more prevalent in group (1 representing 50 % (n=50) of the participant compared to 34% (n=34) in group(2).

- Mortality:

Diabetic patients had 30% (n=30) deaths occurred during hospital admission compared to 10 % (n=10) in group (2) .during 6 months follow up there was 14 % n (10) died in group 1 and 5 % n (5) in group 2 but the difference was statistically insignificant.

Regarding cause of death: the most common cause in both groups was cardiogenic shock representing 53.8 % (n=7) in group (1) patients compared to 40% (n=4) in group (2). Second most common cause was variable between the two groups being septic shock with 23.1 % (n=3) in group (2) patients compared to 10% (n=1) in the other group while in group (2) patients, the third most common cause was sudden cardiac arrest that representing 50% (n=5) in group (2) patients compared to 15.4 % (n=2) in the group.

CONCLUSION

- HFrEF patients with DM had poor quality of life and worse prognosis compared to HFrEF patients without DM
- HFrEF patients with DM had higher mortality compared to none diabetic patients with the most affecting predictor is EF less than 20%.
- HFrEF patients with DM had more in hospital complications as longer duration of hospital admission, with most affecting predictor is orthopnea, rate of hospitalization with most affecting predictor is NYHA class.