



# The Association of BMI and Diabetes Mellitus with Mortality in End Stage Heart Failure Patients on Inotropes

M. Khan M.D<sup>1</sup>, T.A Saadi M.D<sup>1</sup>, S. Adhikari D.O<sup>1</sup>, S. Hussain M.D<sup>1</sup>, M. Asghar D.O<sup>1</sup>, K Kamba<sup>2</sup>, M. Soltys<sup>2</sup>, C. Morreale D.O<sup>1</sup>, N. Glowacki<sup>2</sup>, A. Joshi M.D<sup>2</sup>, S. Pauwaa M.D<sup>2</sup>, C. Sciamanna D.O<sup>2</sup>, M. Dia M.D<sup>2</sup>, G. Macaluso M.D<sup>2</sup>, A, Andrade M.D<sup>2</sup>, W. Cotts M.D<sup>2</sup>

<sup>1</sup>University of Illinois at Chicago / Advocate Christ Medical Center, Dept of Medicine, Oak Lawn, IL;  
<sup>2</sup>Advanced Heart Failure & Transplant Cardiology, Advocate Christ Medical Center, Oak Lawn, IL.

## Background

- Risk factors such as diabetes mellitus (DM) have been associated with increased risk of mortality in patients with heart failure (HF).
- Obesity in diabetic patients tends to worsen outcomes. However, there appears to be the presence of an obesity paradox in which stable HF patients with higher Body Mass Index (BMI) have better survival.
- We sought to evaluate the association of DM and BMI with mortality in patients with end stage HF on palliative inotropic therapy.

## Methods

- We performed a single center, retrospective chart review of HF adult patients who were placed on inotropes (milrinone or dobutamine) as palliative therapy from January 1, 2010 and followed them until October 1, 2019.
- Patients were categorized by BMI (<25 Kg/m<sup>2</sup>, 25-35 Kg/m<sup>2</sup> and >35 Kg/m<sup>2</sup>).

## Methods

- Exclusion Criteria: Patients who received mechanical circulatory support or heart transplant.
- The primary outcome was all cause mortality.
- Multivariate Cox proportional hazards regression model was used for analysis.

## Results

- 115 patients were included in the study.
- Unadjusted analysis revealed significant relationship between mortality and coronary artery disease (CAD) (HR 1.981; p value 0.01) and ischemic cardiomyopathy (ICM) (HR 1.941; p value 0.01).
- After adjusting baseline characteristics using multivariate analysis (Table 1), mortality was associated with DM (HR 2.013; p value 0.04) and history of CABG (HR 0.345; p value 0.03).
- There was no significant association between mortality and BMI in either unadjusted or adjusted models.

Variable	Hazard ratio	p-value
BMI 25-35 Kg/m <sup>2</sup> *	0.619	0.14
BMI >35 Kg/m <sup>2</sup> *	0.397	0.11
DM	2.013	0.04
CAD	2.106	0.29
Ischemic cardiomyopathy	1.623	0.53
Age	1.005	0.74
Creatinine level	2.072	0.02
GFR	1.011	0.42
EF	0.996	0.82
HTN	1.093	0.79
HLD	0.988	0.97
History of PCI	0.587	0.24
History of CABG	0.345	0.03
Arrhythmias	1.254	0.54
Pulmonary Hypertension	0.809	0.55
CKD	0.961	0.92
*reference: BMI<25Kg/m2		

Table 1. Adjusted analysis for mortality

## Results

- When entered as a continuous value, Creatinine level (p value 0.02) was a predictor for mortality in both models.

## Conclusion

- In patients with severe end stage HF on inotropic therapy, DM, history of CABG, and worsening renal function are associated with increased mortality.
- BMI does not appear to affect mortality in this population of patients with end-stage HF.
- Our Small sample size was a significant limitation.
- More studies are needed to further characterize risk factors and help determine which patients would derive the most benefit from palliative inotropic therapy

## References

- Adhikar, S 2019, 'Palliative Outpatient Inotropes in End Stage Heart Failure Patients is Safe with Moderate Survival Benefit: A Single Center Retrospective Study', *Journal of Cardiac Failure* Vol 25, Issue 8, S45-46
- Mano, A 2019, 'Impact of Change in Body Mass Index on Outcomes After Left Ventricular Assist Device Implantation in Obese Patients', *ASAIO Journal* Vol 65, Issue 7, p 668-673