

<sup>1</sup>Department of Medicine, Endocrine Unit, Herlev University Hospital, Herlev, Denmark

<sup>2</sup>Department of Cardiology, Rigshospitalet, Copenhagen, Denmark

<sup>3</sup>Department of Cardiology, Hvidovre University Hospital, Hvidovre, Denmark

<sup>4</sup>Department of Cardiology, Herlev University Hospital, Herlev, Denmark

<sup>5</sup>Department of Cardiology and Cardiothoracic Surgery, Odense University Hospital, Odense, Denmark

<sup>6</sup>Department of Clinical Biochemistry and Pharmacology, Odense University Hospital, Odense, Denmark

<sup>7</sup>Centre of Individualized Medicine in Arterial Diseases, Odense University Hospital, Odense, Denmark

<sup>8</sup>Department of Cardiology, Odense University Hospital, Odense, Denmark

<sup>9</sup>Department of Cardiology, Bispebjerg University Hospital, Copenhagen, Denmark

<sup>10</sup>Faculty of Health and Science, Copenhagen University, Copenhagen, Denmark

## OBJECTIVES

- Evaluate the impact of DM on Galectin-3 (Gal-3) and fibulin-1 levels
- Investigate the association between biomarkers and left ventricular (LV) contractile reserve in systolic heart failure (HF) patients with and without diabetes (DM)

## METHODS

- 155 newly diagnosed HF patients included
- Enrolled within 2 weeks after referral to the outpatient HF clinic
- Low-dose dobutamine echocardiography and measurement of Gal-3 and fibulin-1 were performed in all patients
- Patients without known DM underwent oral glucose tolerance test (OGTT)
- Based on WHO criteria patients were divided into 3 groups; Normal glucose tolerance (NGT), Impaired glucose tolerance (IGT) and newly diagnosed DM

## RESULTS

Table 1. Baseline characteristics according to diabetes status

Demographics	DM (n = 60)	Non-DM (n = 95)	P value
Age, years	70.8 (9.6)	69.7 (10.8)	0.54
Sex (female/male), %	32/68	33/67	0.90
IHD, n (%)	40(67)	52(55)	0.20
BMI, kg/m <sup>2</sup>	28.1 (5.4)	26.3 (5.0)	0.05
FPG, mmol/L	6.9 (1.4)	5.7 (0.5)	<0.001
2hPG (mmol/l)	11.7 (2.9)	6.6 (1.9)	<0.001
HbA1C, mmol/mol	49 (12)	40 (4)	<0.001
Total cholesterol, mmol/L	4.0 (1.0)	4.4 (1.1)	0.02
Estimated GFR, ml/min/1.73 m <sup>2</sup>	68 (26)	74 (19)	0.10
Gal-3, ng/ml	17.9 (12.9-26.1)	15.6 (12.6-19.3)	0.02
Fibulin-1, µg/ml	60 (19)	55 (13)	0.07
LVEF rest, %	34 (29-41)	39 (33-45)	0.003
LV contractile reserve, %	7 (2-10)	10 (4-15)	0.01

Table 2. Associations of Galectin-3 and fibulin-1 levels with clinical and glucometabolic parameters

Parameter	Galectin-3		Fibulin-1	
	β (SE)	P-Value	β (SE)	P-Value
Age, per year	0.16 (0.23)	0.05	0.36 (0.12)	< 0.001
Sex	0.04 (0.07)	0.59	-0.09 (2.75)	0.29
Diabetes mellitus	0.27 (0.07)	0.001	0.16 (2.62)	0.05
eGFR, per ml/min/1.73 m <sup>2</sup>	-0.49 (0.10)	< 0.001	-0.33 (0.06)	< 0.001
BMI, per kg/m <sup>2</sup>	-0.04 (0.006)	0.63	-0.12 (0.25)	0.14
FPG, per mmol/L	0.19 (0.02)	0.02	-0.07 (1.37)	0.44
2hPG, per mmol/l	0.15 (0.01)	0.09	0.26 (0.42)	0.004
HbA1C, per mmol/mol	0.25 (0.16)	0.02	0.21 (0.14)	0.009
NT-proBNP per pg/mL	0.30 (0.12)	< 0.001	0.38 (2.24)	< 0.001

Table 3. Associations of galectin-3 and fibulin-1 levels with echocardiographic parameters

	Galectin-3		Fibulin-1	
	β (SE)	P-Value	β (SE)	P-Value
LVEF, per %	-0.15 (0.14)	0.08	-0.24 (0.14)	0.004
LV contractile reserve, per %	-0.19 (0.06)	0.03	-0.03 (0.21)	0.71

## CONCLUSIONS

- Gal-3 levels were elevated in HF patients with DM
- Galectin-3 and fibulin-1 were associated with HbA1c in HF patients
- None of the biomarkers were associated with the reduced LV contractile reserve previously reported in HF patients with DM