Abstract: P3434

Galectin-3 identifies healthy subjects at risk of developing (pre-)diastolic dysfunction

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Topic(s):
Prevention – Cardiovascular Risk Assessment: Biomarkers

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Background/Introduction
Biomarkers might be useful to identify healthy subjects who are at risk of developing diastolic dysfunction. Cardiac remodeling, in particular fibrosis, is a hallmark of diastolic dysfunction. Previous (pre)clinical studies have linked galectin-3 to fibrogenesis. Therefore, we aimed to evaluate whether galectin-3 would be able to identify apparently healthy individuals who are at risk of developing pre-clinical diastolic dysfunction.

Purpose
To study whether galectin-3 is able to identify healthy subjects who are at risk of developing pre-clinical diastolic dysfunction over time.

Methods
We measured both galectin-3 and B-type natriuretic peptide (BNP) in 1,500 participants of the population study LifeLines. Based upon the biomarker profile, we selected 88 subjects with elevated galectin-3 (>14.3 ng/mL; n = 42) and with low galectin-3 (<9.8 ng/mL; n = 46) values, while all participants demonstrated low BNP. We matched these groups so other confounding variables like age, sex, kidney function (creatinine), body weight (BMI) and blood pressure were comparable between both groups. After approximately five years follow up, we invited those 88 participants to determine the level of diastolic dysfunction using echocardiography. Statistical analyses were performed in IBM SPSS Statistics 25 and StataMP 13.

Results
We included 88 participants at a median age of 50 years (standard deviation ± 11 years) in this case-control study. Besides the galectin-3 levels, all other variables were adequately matched and fully comparable between both groups. Obviously, galectin-3 levels (median, IQR) were markedly different between the groups (galectin-3 levels 7.35 ng/L (6.9 - 8.6) vs 16.4 ng/L (15.1- 17.8), P <0.001).

Subjects with elevated galectin-3 demonstrated signs of structural cardiac remodeling: enlarged left atrial diameter (35.3 mm vs. 37.3 mm P = 0.034), and larger diastolic interventricular septum thickness (IVS) (9.4 mm vs. 10.1 mm P=0.038), and a smaller left ventricular end-diastolic internal dimension index (LVIDd Index) (2.3 cm/m2 vs. 2.2 cm/m2 P=0.026), a smaller left ventricular end diastolic volume (LVEDV) (98.9 mL vs. 89.9 mL P=0.025). In addition, they exhibited several indicators of worse diastolic function, such as a higher E/e’ ratio (5.2 vs. 5.9, P=0.046), while there was no significant difference in the left ventricular ejection fraction (60.8% vs. 59.9%, P=0.110).

Conclusion
Elevated galectin-3, when fully matched for confounding factors, is associated with the development of preclinical-diastolic dysfunction before onset of clinical symptoms. Our data suggest that substantial elevations of galectin-3 in apparently healthy subjects hint towards preclinical cardiac dysfunction.
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