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Role of cystatin C in the development and progression of heart failure in patients with diabetes mellitus

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Objectives : To evaluate the role of cystatin C in the development and progression of heart failure in patients with diabetes mellitus.

Methods : We examined 499 patients with type 1 and type 2 diabetes aged over 25 years. Control group included 60 healthy patients the same age. Renal function was assessed based on the levels of serum creatinine, cystatin C, eGFR, which was calculated according to the CKD-EPI formula, and albuminuria, which was assessed as albumin/creatinine ratio. All patients underwent standard clinical and laboratory examination, with an assessment of the levels of BNP and NTproBNP.

Results : We divided patients into quartiles by cystatin C level: Q1<0.78 mg/l, Q2 0.78-0.92 mg/l, Q3 0.93-1.38 mg/l, Q4>1.38 mg/l. Significant differences in the levels of BNP and NTproBNP were observed in patients with cystine C levels>0.93 mg/l (32.20 [19.85;69.35] pg/ml and 104.25 [57.70;210, 08] ng/l, respectively). Comparing LVEF between quartiles of cystatin C, significant differences were obtained only for the highest quartile (>1.38 mg/l). There were significant positive correlations between cystatin C and BNP ($r=0.56$, $p<0.05$) and NTproBNP ($r=0.58$, $p<0.05$). Multiple regression analysis confirmed the significance of cystatin C ($\beta=172.715$, $p<0.0001$ and $\beta=89.811$, $p<0.0001$) and eGFR ($\beta=-1.261$, $p=0.007$ and $\beta=0.496$, $p=0.029$) as predictors of increased NTproBNP and BNP, respectively.

Conclusions : Cystatin C might be an independent predictor of increased levels of natriuretic peptide in patients with diabetes.