

# **Apelin – possible marker of progression of metabolic disorders in the pancreas in patients with combined course of chronic pancreatitis and type 2 diabetes mellitus**

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**Background:** Apelin is an adipocytokine, which can be considered as unifying link between metabolic disorders in the body and the development of pathological changes in the pancreas in patients with combined course of chronic pancreatitis (CP) and type 2 diabetes mellitus (T2DM).

**Aims:** The aim of this study was to explore the causative factors of progression of metabolic disorders in the tissues of the pancreas and their relationships in patients with combined course of CP and T2DM.

**Patients & methods:** The study was performed on 62 patients (22 males; mean aged  $57.38 \pm 1.84$ ) with CP and T2DM; control group ( $n=20$ ). The survey plan included: BMI, fecal elastase -1,  $\alpha$ -amilase, CRP, apelin, cholesterol, TG, glucose, HbA1c, HOMA-IR, IRI.

**Results:** We found 1.7-fold increase in  $\alpha$ -amilase serum level in patients ( $25.64 \pm 1.45$ ) which was significant higher than in control ( $15.45 \pm 0.68$ ) ( $p < 0.05$ ). Levels of elastase-1 were significantly lower in patients compare to control ( $131.4 \pm 5.4$  vs  $204.9 \pm 0.99$ ,  $p < 0.05$ ). Level of CRP in patients was significantly higher compared to control ( $7.90 \pm 0.94$  vs  $0.25 \pm 0.18$ ,  $p < 0.05$ ). We revealed 2.0-fold increase in serum apelin level in patients which was significant higher than in control ( $349.97 \pm 12.77$  vs  $171.0 \pm 8.2$ ,  $p < 0.05$ ). We found significant higher levels of glucose, HbA1c, HOMA-IR, IRI in patients than in control ( $9.62 \pm 0.26$  vs  $4.98 \pm 0.06$ ;  $7.73 \pm 0.17$  vs  $5.83 \pm 0.07$ ;  $7.92 \pm 0.64$  vs  $0.82 \pm 0.07$ ;  $17.16 \pm 0.92$  vs  $3.7 \pm 0.29$ ; respectively,  $p < 0.05$ ). We found 1.8-fold and 1.7-fold increase in cholesterol and TG levels in patients ( $6.10 \pm 0.15$  and  $2.41 \pm 0.11$ ) which was significant higher than in control ( $3.38 \pm 0.06$  and  $1.36 \pm 0.13$ ;  $p < 0.05$ ). There were correlation between apelin and BMI ( $r=0.50$ ;  $p < 0.05$ ), CRP ( $r=0.72$ ;  $p < 0.05$ ), elastase-1 ( $r=-0.69$ ;  $p < 0.05$ ),  $\alpha$ -amilase ( $r=-0.27$ ;  $p < 0.05$ ), glucose ( $r=0.59$ ;  $p < 0.05$ ), HOMA-IR ( $r=0.70$ ;  $p < 0.05$ ),

cholesterol ( $r=0.38$ ;  $p<0.05$ ) and TG ( $r=0.56$ ;  $p<0.05$ ).

**Conclusion:** The results suggest the possible use of serum apelin level as a possible marker of progression of metabolic disorders in the pancreas on CP and T2DM.