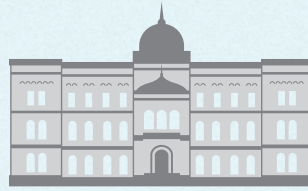


11<sup>th</sup> BALTIC  
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NOVEMBER 13-15, 2024



ANATOMICUM, RIGA

# 11<sup>th</sup> Baltic Morphology Meeting

## ABSTRACT BOOK

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## Chronic stress impact on pancreas morphology in type 1 diabetes mellitus

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**Objectives.** The aim of this study was to evaluate the impact of chronic psychological stress on the pancreatic tissue in type 1 diabetes mellitus (T1DM).

**Materials and methods.** 35 mature healthy Wistar rats were randomly assigned and housed into 4 groups: the Control group, Stress group, T1DM group, and T1DM+Stress group. 28 days of restrain stress was applied for two hours each day. A single dose of 65 mg/kg of streptozotocin treatment was used to establish diabetes using the procedure. On the 29<sup>th</sup> day of the experiment, rats were anesthetized. Pancreas were removed and prepared for histological analysis. 7 samples were analyzed for the Control group, 8 for the Stress group, 11 for the T1DM and 7 for T1DM+Stress group. Samples were analyzed using the QuPath (Version 0.4.4) program by measuring the endocrine part with total pancreatic tissue ratio. SPSS program was used for statistical analysis. The Kruskal-Wallis test was used to determine differences in the median of endocrine part between the four groups.

**Results.** Percentage of endocrine part in a total area of pancreatic tissue median of the Control group was 0.96 (min: 0.52; max: 1.77); the Stress group – 0.41 (0.23; 0.93); T1DM group – 0.45 (0.09; 1.64); T1DM+Stress group – 0.23 (0.08; 0.46). A notable difference was between the medians of Control vs. Stress group, suggesting that stress may have a significant impact on the measured outcome. The Control group had a higher median value, indicating better outcomes compared to the Stress group ( $p = 0.017$ ). There was a significant difference between Control and T1DM groups, where  $p$  was 0.014. But the highest difference was between Control and T1DM+Stress group, with a  $p$  value  $< 0.001$ .

**Conclusions.** The pancreas, which plays a crucial role in regulating blood sugar levels by producing insulin, may become overworked and less effective under stress. A combination of T1DM and stress may worsen the condition or outcome being measured.