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IMPACT OF TYPE 1 DIABETES AND CHRONIC STRESS ON HEPATIC HISTOMORPHOLOGY

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Aim. Diabetes mellitus is known to cause liver weight changes, as well as histological tissue changes, such as inflammatory cell infiltration and an increase in fibrosis. Inflammation and fibrosis in the liver may likewise be caused by stress conditions. This study aims to demonstrate histomorphological changes in liver tissue aggregately caused by diabetes and stress.

Methods. Histological analysis of liver specimens was performed after a scientific experiment involving groups of rats: Control group (n=9) (no diabetes, no stress), Stress group (n=9) was subjected to chronic psychological stress; T1DM group (n=8) obtained streptozotocin-induced type 1 diabetes mellitus; T1DM+Stress group (n=9) was subjected to both diabetes and stress**.** After euthanasia, the rats' livers were weighed, H&E slides were prepared, and histological analysis was performed using the QuPath programme. The total section area, as well as fibrotic and inflamed areas, were manually marked and automatically measured. The percentage of fibrotic and inflamed areas was then calculated. A t-test was performed, comparing the mean values of weight, fibrosis and inflammation between the groups.

Results. The data showed a statistically significant increase in liver weight in the Stress group in comparison to all the other groups ($p < 0.05$). All experimental groups showed a statistically insignificant increase in fibrosis compared to the Control group ($p > 0.05$). Inflammation was more prominent in all experimental groups compared to the Control group, with a statistically significant increase of inflammation in non-diabetic stressed rats (Stress group) compared to the Control group ($p = 0.0051$) and the T1DM+Stress group ($p = 0.0054$).

Conclusions. Although chronic stress may promote liver fibrosis and inflammation in diabetes, worsening hepatic damage, it may trigger certain adaptive responses, such as anti-fibrotic and anti-inflammatory effects.

Keywords. Chronic stress; diabetes mellitus; liver fibrosis.