Morphometric Study of Changes in GAD 65 Expressing Beta Cell Mass In The Islets Of Langerhans In Pregnant Mice

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Abstract

INTRODUCTION: This study explored the adaptive changes in pancreatic islets by assessing the maternal pancreatic beta-cell mass (P beta CM), islets size, number, shape, distribution and vascularity using the anti-GAD65 Ab as a marker in pregnant mice. MATERIALS AND METHODS: Fourty female Swiss-Webster mice were randomly divided into two age matched groups of 20 animals each, pregnant and control (non-pregnant) groups. The pregnant mice were sacrificed at Day 19 of gestation and the control group was sacrificed 19 days after observation in the same environmental conditions. Specimens of pancreata were fixed in 10% formal-saline, and processed for light microscopy. Paraffin sections were stained with chromogen DAB. Image scope (APERIO) with Image J software was used for morphometric study. RESULTS: Islets cells showed specific reaction with GAD65 Ab. There was an increase in the cellularity and vascularity of the P beta CM. A significant increase in the islets area of the pregnant group ranging between 32-723 mu m(2) in comparison with the control group that ranged between 5-210 mu m(2), the islet size and numbers also increased; there were numerous newly formed islets and coalescence of adjacent islets, positive reactivity of beta-cells toward anti-GAD65 during pregnancy, the mean of positive granulation in P beta CM in pregnant group was 8273.5 +/- SE 831.35 while in control group was 34 +/- SE 0.2. CONCLUSION: The changes for alteration in P beta CM such as increase in cells number, size, positive anti-GAD65 reactivity and their vascularity during pregnancy is related to the adaptation for hormonal and nutritional demands of both foetus and mother.

Keywords

Author Keywords: beta-cell mass; GAD65; islet of Langerhans; pancreas; pregnancy
KeyWords Plus: PANCREATIC-ISLET; PROLACTIN RECEPTOR; GENE-EXPRESSION; SEROTONIN; PROLIFERATION; AREA

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