Results and Discussion. In the first group, when the water pressure reaches 0.5±0.1 bar. there was a rupture of the small curvature of the stomach. The rupture of the wall of an isolated esophagus was obtained at a water pressure of 1.2 to 1.4 bar. The burst pressure of the esophagus in groups 2 and 3 was 0.9±0.1 and 0.7±0.1 bar. There was always a rupture along the left lateral wall of the over-diaphragmatic segment of the esophagus. The maximum intraluminal pressure in the gag reflex with FGD was an average of 0.15 bar. without a significant difference between the stomach and esophagus.

Conclusions. The rupture of the wall of the stomach occurs at a lower intraluminal pressure than the rupture of the wall of the esophagus.The place of rupture of the esophagus is always the same. Intraluminal pressure, which occurs during vomiting, cannot lead to rupture of the esophagus wall, since it is much less than the burst pressure.

PANCREATIC B-CELL TRANSPLANTATION AS ONE OF THE MOST PERSPECTIVE METHODS FOR TREATING TYPE I DIABETES MELLITUS

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Key words: *diabetes mellitus, β-cells, transplantation, immunoprotection*

Background. Type I diabetes mellitus is an autoimmune endocrine disease caused by pancreatic islets destruction, and insulin deficiency leading to chronic hyperglycemia. Nowadays new methods of diabetes treatment such as insulin-producing cells therapy are being actively developed.

Aim. The main goal of this work is to evaluate advantages, disadvantages and prospects of modern β-cells transplantation techniques.

Material and Methods. Analysis of scientific literature from Medline and Scopus databases for the last 20 years.

Results and Discussion. The strategy of obtaining β-cells includes differentiation of stem cells, reprogramming of mature specialized cells, autologous or donor cells isolation and xenotransplantation technology.The process is associated with a minor surgical intervention. Thus, the cells are injected into the portal vein through a catheter, installed under the ultrasound control. Islet cells can also be transplanted to the liver parenchyma, the pulp of the spleen, splenic artery, rectus abdominis, peritoneal cavity, greater omentum and even subcutaneously. The main problem of β-cells therapy is still the immunoprotection of transplants. Leading strategies include drug immunosuppression and macro-or microencapsulation using biodegradable scaffolds. However, transplantation of autologous cells is more promising as it can remove necessity of immunoprotection at all.

Conclusions. High cost, complexity of implementation and uncertain consequences of such cell therapy create obstacles for its wide application in clinical practice. Existing methods do not allow the patient to get rid of the disease once and for all. Nevertheless, β-cells transplantation has great prospects as a technology that can radically change the approach to the treatment of diabetes.

EXPRESSION OF THE O-LINKED N-ACETYLGLUCOSAMINE CONTAINING EPITOPE H IN NORMAL MYOMETRIUM AND UTERINE SMOOTH MUSCLE CELL TUMORS

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Key words: *tumor, cell, myometrium, uteri, immunohistochemistry*

Aim. In the present study, we focused on uterine smooth muscle cell tumors and their adjacent normal myometrium to gain further insight into the expression patterns of epitope H in human tissues.

Material and Methods. The indirect immunoperoxidase method was applied using the mAbH and the monoclonal anti-cytokeratin 8 antibody (AbCK8) in 50 cases of typical uterine leiomyomas and in five of uterine leiomyosarcomas.

Results and Discussion. Epitope H showed: 1) intense immunohistochemical expression in 46% and moderate expression in 54% of uterine leiomyomas; 2) intense immunohistochemical expression in 40% and moderate expression in 60% of uterine leiomyosarcomas; 3) no difference in the immunohistochemical expression between leiomyomas and their adjacent myometrium and between leiomyosarcomas and their adjacent myometrium; 4) immunohistochemical expression of cytokeratin 8 was not detected in the normal and neoplastic smooth muscle cells; 5) Western immunoblotting showed that in the smooth muscle cells of the myometrium and leiomyomas, epitope H is localized in four polypeptides with molecular weights of 100, 61, 59, and 54 kDa, and 6) Western immunoblotting did not detect cytokeratin 8 in the normal and neoplastic smooth muscle cells.

Conclusions. The present results indicate fluctuations of the epitope expression levels in uterine smooth muscle cell tumors and their adjacent myometrium. Furthermore, indicated that cytokeratin 8, without being present in the cells of the myome-

trium, leiomyomas and leiomyosarcomas, shares its epitope H, which contains its unique sugar O-N-acetylglucosamine residue, with four other unrelated polypeptides produced by the normal and neoplastic smooth muscle cells. This should be considered when using anti-cytokeratin 8 antibodies in immunohistochemistry against smooth muscle cell tumors to avoid false positive immunohistochemical results.

TRANSGENIC MICE MODEL OF ALZHEIMER'S DISEASE: EARLY CHANGES IN THE NEUROGENESIS IN THE SUBGRANULAR ZONE OF THE HIPPOCAMPUS

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Key words: *mice model, Alzheimer's disease, neurogenesis, subgranular zone*

Background. Dysregulation of neurogenesis in the subgranular zone (SGZ) of the hippocampus has been related to cognitive deficits and memory loss in neurodegenerative diseases, such as Alzheimer's disease (AD). Transgenic (Tg) 5xFAD mice represent a model of Alzheimer's disease characterized by an early deposition of amyloid plaques. SoxB transcriptional factor regulate different cellular processes during embryonic and adult neurogenesis, but their roles in neurodegenerative disorders is not fully understood.

Aim. The aim of this study was to characterize the early changes in hippocampal neurogenesis in 8 weeks old 5xFAD Tg mice and to investigate the expression of SoxB transcriptional factors.

Material and Methods. Transgenic male mice and their respective non-transgenic controls were used in the present study.

Results and Discussion. Proliferating cells and immature neurons were detected by immunohistochemical expression of Ki67 and doublecortin (DCX), while neuronal stem/precursor cells were identified by the expression of Sox 1, Sox 2 and Sox21. Immunohistochemical analysis showed that 5xFAD mice in the SGZ of the hippocampus have significantly lower numbers of Sox 1, Sox21 and DCX immunoreactive cells, while the number of proliferating cells was unchanged when compared to their non-transgenic controls. The results of our study show that early changes in the neurogenesis in 5xFAD animal model occur despite the preserved proliferative potential in the SGZ, and clearly indicate for the first time that SoxB transcriptional factors are affected during this process.

DEVELOPMENT OF INTERSTITIAL CELLS OF CAJAL IN THE HUMAN FETAL APPENDIX

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Key words: *interstitial cells of Cajal, appendix, fetus, C-kit, human*

Aim. Interrelatedness and coordinated functions of interstitial cells of Cajal (ICC), enteric nervous system (ENS) and smooth muscle cells constitute the basis of peristaltic contractions of the gastrointestinal tract (GIT). ENS in the human appendix has a distinct pattern of organization, different from other parts of the GIT. ICC subtype distribution is also different in the appendix compared to other parts of the gut. The aim of the present study was to determine the distribution of enteric ganglia and appearance of c-kit-IR ICC in the human fetal appendix.

Material and Methods. The study material consisted of 14 human fetal appendixes at 15–32 weeks of gestational age. The differentiation of enteric neurons and smooth muscle cells was immunohistochemically examined by using anti-NSE and anti-desmin antibodies, respectively. The specimens were exposed to anti-c-kit antibodies in order to investigate ICC differentiation.

Results and Discussion. An important finding of this paper was the presence of numerous groups of neurons within the muscle layers of the appendix wall. In particular, in addition to myenteric plexus (MP) and submucosal plexus (SMP), there were groups of neurons within the circular and longitudinal muscle layers in human fetal appendix wall. Such a finding differed considerably from other parts of the small and large bowel. At 15 weeks of development, c-kit immunoreactive ICC were present within the circular muscle layer, but were missing around the MP ganglia and within the longitudinal muscle layer. Such a distribution pattern persisted up to 32 weeks of development, differing significantly from ICC distribution in other parts of the human fetal gut.

Conclusions. A specific organization of ENS elements and ICC subtypes in the human appendix could possibly have an impact on motility and the etiology of appendicitis occurring later in life.