J Clin Exp Pathol 2016, 6:3 (Suppl)
http://dx.doi.org/10.4172/2161-0681.C1.023

6th European Pathology Congress

Emerging Concepts in the our understanding of colorectal cancer

Martine Claire McManus
Cleveland Clinic Abu Dhabi

Colorectal cancer is one of the most common cancers globally. Colonic adenocarcinoma is a straightforward diagnosis under the microscope, and its molecular progression from adenoma-to-carcinoma is well-defined and understood. We know that right-sided and left-sided colon cancers are often morphologically and biologically distinct. Right-sided tumors frequently show mucinous histology, usually have tumor-infiltrating lymphocytes, and progress along the microsatellite instability pathway. Lynch Syndrome is the prototypic right-sided tumor. Left-sided tumors, conversely, are rarely mucinous, do not demonstrate tumor-infiltrating lymphocytes, and progress along the chromosomal instability pathway. Familial Adenomatous Polyposis is the prototypic left-sided colon cancer syndrome. We know that signet-ring cell morphology is a negative prognostic indicator, and that tumor-infiltrating lymphocytes usually imply a better prognosis. Colonic carcinogenesis is dependent on complex interactions between the intestinal microenvironment and the host immune response. Insight into the tumor microenvironment is beginning to provide some of the potential mechanisms of tumorigenesis. Emerging concepts include elucidation of the role of inflammatory cells in tumorigenesis. How do inflammatory cells interact with tumor cells? Why do some inflammatory cells act to inhibit tumor growth while others are tumor-promoting? Is there a "malignant inflammatory profile"? Another area of active research is the influence of the intestinal flora, the "colonic microbiome" on tumorigenesis. Studies suggest that disturbances in the composition, distribution and/or metabolism ("dysbiosis") of the colonic microbiota may shift the homeostatic environment of the colon toward inflammation, dysplasia and cancer. Is there a "malignant microbial signature"? Better understanding of how inflammation and dysbiosis promote tumorigenesis may provide new strategies for prevention and treatment of colorectal cancer.

McManuM@ClevelandClinicAbuDhabi.ae

Voltage-gated calcium channels affected mitochondrial metabolism of acetyl-CoA in Zn evoked SN56 neuronal cells

Zysk Marlena, Gapys Beata, Gul Hinc Sylwia and **Bielarczyk Hanna**
Medical University of Gdansk, Poland

Cholinergic neurons produce acetyl-CoA, which is subsequently used as a fuel for energy production. Exclusively those neurons produce acetylcholine from acetyl-CoA. Consequently, extra utilization pathway may induce acetyl-CoA shortages and consequently impairment of brain energy metabolism. Disturbances in Ca signaling could play regulatory role in neurons susceptibility to neurodegenerative conditions. The aim of our study was to investigate whether the Voltage-Gated Calcium Channels (VGCCs) could moderate the cholinergic neurons susceptibility on neurodegeneration. Selected blockers of VGCCs (10 μM nifedipine, 0.2 μM ω-conotoxin-MVIIC, 0.5 μM ω-conotoxin-GVIA) were used as a Ca depletion factors in SN56 neuroblastoma cells. Short term SN56 cells exposition on 0.15 mM Zn increased the Zn level from 0.6 to 36 nmol/mg protein. However, in the presence of 10 μM nifedipine and ω-conotoxins, the Zn-accumulation was decreased by about 50%. Zn caused in SN56 about 49% increase of non-viable cells fraction; whereas incubation cells with VGCCs blockers and Zn led to 25% decline in the number of trypan blue positive cells. The acetyl-CoA level in SN56 was 26.9 pmol/mg proteins. However, the SN56 cells exposition on 0.15 mM Zn decreased its level by 43%. In addition, acetyl-CoA level in VGCCs blocked SN56 was as high as in control conditions. Achieved results indicated that VGCCs regulated the Zn evoked neurotoxic effects on acetyl-CoA metabolism in SN56 cholinergic cells. Moreover, VGCCs might play particular role in neurotoxicity of Zn and show that disturbance of Ca homeostasis in this condition can be one of the factors which moderate acetyl-CoA metabolism in cholinergic neurons.

marzysk@gumed.edu.pl