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The profile of melatonin receptors gene expressions and genes associated with their activity in colorectal cancer patients

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The antiproliferative and immunomodulatory effects of melatonin (MLT) have been demonstrated in a variety of neoplasms including colorectal cancer (CRC). In humans and other mammals, MLT acts on target tissues through membrane and retinoid nuclear receptors. The aim of the study was to evaluate transcription activity of melatonin receptors and genes associated with regulation of their activity in colorectal adenocarcinoma tissues in relation to clinical stage of cancer. A total of 24 pairs of surgically removed tumoral and healthy (marginal) tissues samples from colorectal cancer patients at clinical stages I-II and III-IV were collected. As the additional control, twenty normal samples were taken from people whose large intestine tissues were reported as non-tumoral after colonoscopy. Expression of mRNA genes was studied by microarray HG-U133A analysis. The analysis of genes expression profile was performed using commercially available oligonucleotide microarrays of HG-U133A (Affymetrix, Santa Clara, CA). We found a high increase of MT1 mRNA expression levels in all cancerous samples vs. non-cancerous tissues. The MT2 mRNA expression levels increased slightly in marginal and malignant samples. The melatonin receptors gene expression was dependent on tumour grade. Among the genes participating in the cascade of signal transfer in cell activated by MLT via MLT1 and MLT2, the following ones: GNA11, OXTR, and TPH1 encoding genes respectively as differentiating stage III and IV of CRC. Monitoring the expression levels of genes that are related to melatonin receptors may offer a strategy to anticipate tumour development and estimate the molecular changes that occur during carcinogenesis. The mechanism behind this association needs further elucidation.

Biography

P Koziel has graduated from Silesian Medical University in 2011 and works in Department of Internal Medicine in Bytom as Junior Assistant. Currently, he is also a PhD student in the Medical Doctor program at Silesian Medical University in Katowice. His works were recently published in 4 international journals and 2 local journals, in the areas of gastroenterology, oncology and endoscopic techniques in particular.

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