tumor aggressiveness, tumor invasion and metastatic potential, and risk for biochemical recurrence were evaluated according the EUA guideline, 2016. PSA was determined immunochemically, serum 25-hydroxy vitamin D (25OHD) levels were assayed by HPLC-MS/MS (Galunska et al., 2014), bioavailable 25OHD was calculated according Kim et al., 2017. VDBP and albumin were analyzed using commercial kits. One-way ANOVA, correlation and multifactorial regression analysis were used for data analysis. Statistical significance was accepted at p<0.05.

Results. Worsened vitamin D status demonstrated by significantly lower levels of total 25OHD and bioavailable 25OHD was established for prostate cancer patients, compared to the control noncancerous patients (p < 0.001 for 25OHD, p < 0.05). A decreased total and bioavailable 25OHD with the risk of bone metastases (PSA>20ng/ml) was indicated. The risk of biochemical recurrence negatively correlates with the serum total (Spearman r = - 21, p =<0.05) and bioavailable 25OHD (Spearman r = - 34, p =<0.01). Serum 25OHD was lower in patients with more aggressive prostate cancer and reversibly correlated with the Gleason score (Spearman r = - 0.26, p <0.05). Multiple regression analysis showed negative influence of serum 25OHD on tumor aggressiveness (β = - 0.24, p<0.05). ROC-curve analysis revealed better diagnostic efficiency for 25OHD (AUC = 0.69, p<0.001) compared to the widely accepted as a biomarker total testosterone (AUC = 0.65, p<0.01).

Further research for validation and introducing serum 25OHD levels to other biomarkers already established and used in clinical practice as well as changing the algorithm of treatment by vitamin D supplementation of patients with prostate diseases.

References:

Key words: prostate cancer, vitamin D, tumor aggressiveness, biomarker

RELATIVE GENE EXPRESSION OF SELECTED MIRNAS AS POSSIBLE BIOMARKERS IN COLORECTAL CANCER STAGE DEVELOPMENT

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Many studies have demonstrated the significant contribution of miRNAs in cancer pathogenesis - controlling tumor growth, invasiveness and avoidance of the immune system by cancer cells.

Materials and Methods. In this preliminary study, we observed miR-143, miR-200c, miR-101, miR-34b and miR-375 gene expression in 42 samples of formalin fixed and paraffin embedded colorectal cancer (CRC) tissue samples in comparison to healthy neighboring tissue of same patients. Expression levels were analyzed in relation to RAS mutational status and cancer stage. Gene expression analyses were performed using qPCR technique and expression levels were normalized against U6.

Results. The results of RAS wild type CRC patients showed decreased expression of all investigated miRNAs in contrast to RAS mutant patients, where no change in selected genes was detected. According to cancer progression stage, change in the expression profile of miRNAs was observed. In stage IIA levels of expression of all studied miRNAs were reduced compared to healthy tissue controls. MiR-200c and miR-101 were elevated more than twice approximately, whereas miR-143, miR-34b and miR-375 were not changed in stage IIB CRC. At stage IV, which is related to tumor metastasis decreased levels of for miR200c, miR101 and miR375 were established and no change in the profile of miR143 and miR34b expression. The fact that miR143 changes only in stage IIA patients is possibly due to accumulation of mutations in RAS genes in late stages (IIIB and IV). The observed increase in miR-200c expression in IIB stage may be related to increased metastatic potential in nearby lymph nodes and organs. MiR-101 has the same expression profile as miR-200c in different stages of CRC. The decrease of miR-375 levels in early stage IIA possibly aims to support tumor proliferation.

Among the analyzed in recent study miRNAs, miR-200c and miR-101 appeared to be the most promising candidates for potential biomarkers, for stage development of colorectal cancer, in future analyses.

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Keywords: colorectal cancer, miRNAs, gene expression

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