YKL-40 EXPRESSION IN GLIOMAS PATIENTS BLOOD SERUM AND TUMOR TISSUE

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Glioblastoma is the most common, very infiltrative and most agressive out of astrocytic tumors [1]. Because of its malignancy and high relapse possibility, average survival time is less than 15 months in patients, who are diagnosed with glioblastoma [2]. It is very important to find biomarkers for earlier glioblastoma detection, etter treatment and longer survival time [3]. YKL-40 – secreted protein which is associated with proliferation, migration, invasion, angiogenesis of cancer cells and it is considered as a potential glioblastoma marker in blood serum [4;5].

The aim of this study was to verify suitability of YKL-40 as astrocytomas detection biomarker in patients blood serum and postoperative tumor tissue.

In order to evaluate YKL-40 suitability for astrocytomas detection in blood serum ELISA method was used. Results showed that there is a significant difference (p=0.033) between healthy control and high grade astrocytoma blood serum specimens based on YKL-40 protein level means of each group. Western Blot method was used to measure a relative amount of YKL-40 protein in postoperative tumor tissue but while performing statistical analysis no significant differences were found between different malignancy grade. *YKL-40* gene expression in tumor tissue was evaluated by RT-PCR method. Results showed statistically significant difference (p<0.0001) between low and high grade astrocytoma based on *YKL-40* gene expression.

Results of this research also have shown that protein amount and gene expression is related with survival time. Long-term survival was significantly influenced by lower protein level in blood serum and lower gene expression in tumor tissue, while lower protein level in tumor tissue influenced shorter survival time. All values were also compared with individual patients characteristics: malignancy grade, age, gender and survival time. It was found significant connections of protein amount in blood serum with malignancy grade (p=0.036), age (p=0.008) and survival time (p=0.016). Significant gene expression connections with malignancy grade (p=0.000013), age (p=0.0001), gender (p=0.015) and survival time (p=0.001) were also noticed. It was also found statistically significant (p=0.04) weak positive correlation (r=0.273) between YKL-40 protein level in blood serum and *YKL-40* gene expression in tumor tissue.

Results of this study confirmed that YKL-40 is a potential glioblastoma marker. Protein and gene expression showed interfaces with astrocytoma malignancy grade and survival time and also correlation between each other.

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