DESCRIPTION FOR THE GENERAL PUBLIC

Pituitary adenomas are tumors, that originate from anterior lobe of pituitary gland, which is a central regulator of hormonal homeostasis and is crucial for human survival. Pituitary tumors accounts for 10-15% of all intracranial tumors and predominantly are adenomas. Most commonly they are benign tumors, however malignant forms are also observed, characterized by poor prognosis. Only rapid detection and neurosurgical intervention may improve the outcome. At present, there is no good biomarker for invasive pituitary adenomas [1,2,6].

MicroRNAs are small non-coding RNAs, having ability to regulate genes. In the literature, different level of microRNA expression are confirmed in many cancers types [4,5]. The latest data suggest, dysregulation of microRNAs in human pituitary adenomas as well [3].

The current project, aims to identify novel microRNAs, that could become in the future emerging biomarker for invasive pituitary adenomas, using Next Generation Sequencing (NGS). The next goal of this project is to study regulatory role of chosen microRNAs having binding sites in 3' UTR genes for cell cycle proteins. Up to date, the regulatory role of selected microRNAs and their influence on the level of the cell cycle proteins expression in human pituitary adenomas remains unclear. It is worth to highlight, that increased expression cyclins
being the scope of this project, is often correlated with higher malignancy, invasion and metastases in many cancers [7].

To sum up, the present project involves the influence of epigenetic factors on cell cycle proteins expression and invasive potential in vitro on pituitary adenomas model cell lines.
At the same time, the aim of this study is to explore the novel microRNAs, which abnormal expression was confirmed in preliminary study.
The results of the experiments included in the project will have a high scientific value, since may help within the meaning still unclear - the influence of microRNAs on cell cycle proteins expression in human pituitary adenomas. Moreover, the results of this project may help to discover new cellular disorders leading to inhibition or cancer cells progression. Finally, results of the project may indicate novel therapeutic targets in the treatment of the human pituitary adenomas.

Literature:
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