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Fund “Nauka” Project № 19010 Resume – Competition-Based Session 2019:

“ Prognostic and predictive markers in glioblastoma multiforme ”

Project leader: Assoc. prof. Deyan Lyudmilov Dzhenkov, MD, PhD

Project participants:

- George Stoyanov, MD
- Deyan Dzhenkov, MD, Ph.D
- Peter Valchanov, MD
- Prof. Peter Genev, MD, Ph.D.
- Assoc. Prof. Radoslav Georgiev, MD, Ph.D.
- Prof. Anton Tonchev, MD, Ph.D., D.Sc
- Assoc. Prof. Stoyan Pavlov, MD, Ph.D.
- Reneta Georgieva, student
- Emran Lutfi, student

Purpose:

Increasing the volume of knowledge about the morphological features of tumor growth in the most common malignant tumor of the central nervous system – glioblastoma multiforme and the correlations between the location and size of the tumor, the pattern of migration of tumor cells and the stem-cell populations in the tumor, as well as patient survival.

Methodology:

The study is retrospective in nature. The study does include direct tests on subjects. The subject of the study is surgically removed tumor tissue (in the process of patient diagnosis) remaining after routine pathoanatomical testing and diagnosis. The remaining tumor tissue archive material will be subjected to immunohistochemical and immunofluorescence labeling with selected markers, using a standardized and automated technique. The reporting of the results will be based on histological criteria, the expression will be reported by an automated algorithm and graded according to established statistical methodologies.

In order to establish a correlation between radiological and histological criteria, three-dimensional reconstructions will be performed on some patients for volumetry and to differentiate the expression of markers in the individual parts of the central nervous system.

The experience of project members on the topic covers more than twenty-five full-text publications, most of which have been published in refereed journals (Web of Science, Scopus) and have been cited more than 60 times.

Achieved results:

Innovations were implemented in terms of diagnostic modalities, and extensive analyzes were made of the clinical and morphological characteristics of the patients – gender, age, localization, size, growth rate. Morphologically, new markers introduced in the WHO classification were examined, which led to a change in the diagnoses of some patients, due to the newly defined more favorable clinical course of the disease in them. The expression levels of a cytoskeletal stabilizing agent, which has an established role in taxane and rapamycin therapy in other nosological tumor entities, were also morphologically determined and a model for their application to Diaph3 expression was proposed. The importance of the ratios in the circulating blood formed elements and their role in counteracting tumor growth, as well as their importance for the postoperative survival of the patients, was established.