Cognitive functioning in glioma

Previous studies have shown that cognitive functioning in brain tumor patients is associated with the functional network characteristics of specific resting-state networks or with whole-brain network characteristics. These studies, however, did not acknowledge the functional contribution of areas in the contralesional, non-tumoural hemisphere, even though these healthy remote areas likely play a critical role in compensating for the loss of function in damaged tissue. In a study, De Baene et al. examined whether there is an association between cognitive performance and functional network features of the contralesional hemisphere of glioma patients. They found that local efficiency of the contralesional hemisphere was associated with performance on the Reaction Time domain, whereas contralesional assortativity was associated with Complex Attention and Cognitive Flexibility scores. The results suggest that a less segregated organization of the contralesional hemisphere is associated with better Reaction Time scores, whereas a better spread of information over the contralesional hemisphere through mutually interconnected contralesional hubs, is associated with better Cognitive Flexibility and better Complex Attention scores. These findings urge researchers to recognize the functional contribution of remote, undamaged regions and to focus more on the graph metrics of the contralesional hemisphere in the search for predictors of cognitive functioning in brain tumour patients [1].

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De Baene W, Rutten GJM, Sitskoorn MM. Cognitive functioning in glioma patients is related to functional connectivity measures of the non-tumoural hemisphere. Eur J Neurosci. 2019 Aug 1. doi: 10.1111/ejn.14535. [Epub ahead of print] PubMed PMID: 31370107.