Genetic variants associated with colorectal brain metasases suscptibility and survival

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Bowel cancer: Gene profile as prognosis tool in brain metastases

Approx. 4,700 people in Austria fall ill with bowel cancer every year. One to two percent of the victims also sustain brain metastases during the latter stages of the illness. In a joint study with the University of Southern California, USA, researchers of MedUni Vienna have now specified gene variations in the DNA sequence which allow more precise prognoses on the life span, but could also be significant as an approach for medicinal, personalised therapies. The results of the study with 70 patients, to date the largest patient group worldwide, have now been published in the renowned *Pharmacogenomics Journal*.

"Brain metastases in connection with colorectal cancer will become more frequent and clinically significant due to modern therapies which allow a constantly expanding survival rate", says Stefan Stremitzer of the University Clinic for Surgery of the MedUni Vienna and one of the study directors on the occasion of the World Cancer day next Thursday. For example, brain metastases occur more frequently in breast cancer or lung cancer than in bowel cancer - the new findings of the current study could also be significant in these two diseases, create impulses for future research and lead to new, target-oriented therapy options.

Certain gene variations help to overcome the blood-brain barrier

The tumour cells have to overcome the so-called blood-brain barrier, a barrier for the protection of the brain, in order to form brain metastases. In the process, researchers were able to identify gene variations in the DNA sequence which could make it easier for the tumour cells to dock onto the brain. Stremitzer: "We were able to establish gene profiles and groups and demonstrate which combination influenced the prognosis."

There are many differences in the DNA sequences in the human body. So, for example, also the colour of the eyes can be attributed to such - in this case harmless - difference.

As well as the group with brain metastases, the researchers also examined 45 patients with colorectal cancer without brain metastases. In the process, results could be substantiated: variations in those genes which were attributed with a connection to the prognosis in patients with brain metastases were also associated with the occurrence of brain metastases.

More information: S Stremitzer et al. Genetic variants associated with colorectal brain metastases susceptibility and survival, *The Pharmacogenomics Journal* (2015). DOI: 10.1038/tpj.2015.86