LABOR – PRAXISKLINIK GbR
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Gliapheresis: Isolation of target specific molecules as a basis for the generation of escape resistant NK cells

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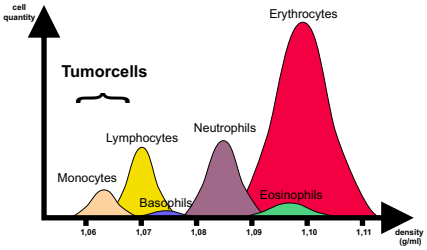
The underlying cause of glioblastoma is the loss of controllability of normal glial cells and the formation of tumor stem cells in a molecular niche. The Labor-Praxisklinik Dr. Kübler & Partner GbR has a patented system available for isolation, quantification and molecular characterisation of these cells (EP1486787B1). After dissolution of epithelial cell layers GFAP expressing Cancer Stem Cells (CSCs) can be found in the bloodstream, which have been undergone epithelio mesenchymale transition (EMT) and which represent the heterogeneity of both the primary tumor and disseminated cells. Therefore, the cells change their cell-specific characteristics and thus gain migratory capability and invasiveness. They already circulate in the bloodstream before a primary tumour gets visible. The early detection of these cells is a revolution in prevention, diagnosis and treatment. [1-9, 14]

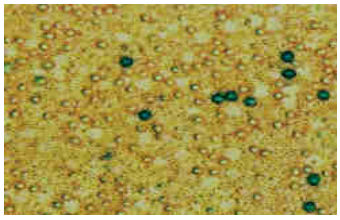
Gliapheresis

The Diagnostic Apheresis (gliapheresis) enables a quantitative extraction of metastasis initiating Cancer Stem Cells (MICs) from the bloodstream and their complete molecular-pathological characterization without any biopsy (PD-L1, c-Met, Oct-3/4, GFAP, EGFR, erb/B2, erb/B3, myc, ras, p53m, MDR, CD44v5/v6, VEGF, Akt/mTOR, IDO, Survivin, Urokinase). On the other hand it allows the isolation of precursor cells of the immune system.[10-14]

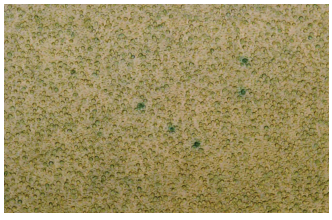


Detection

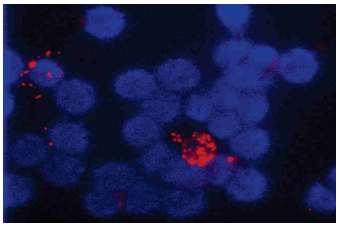
A specifically developed ELISA test (enzyme linked immuno-sorbent assay) as well as FISH techniques (fluorescence in situ hybridisation) provide a single cell detection and consequently a quantification. Furthermore an expression profile of the apheresis derived circulating tumor cells is created by determination of different biomarkers. Precursor cells of the immune system are cultivated and prepared for treatment.[7,14]



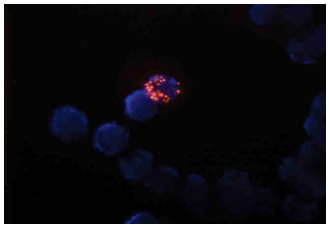
GFAP positive cells



Oct-3/4 positive cells



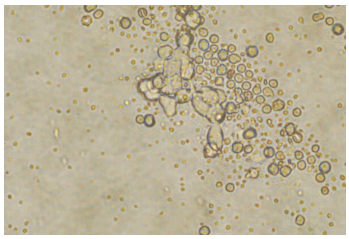
MET gene amplification



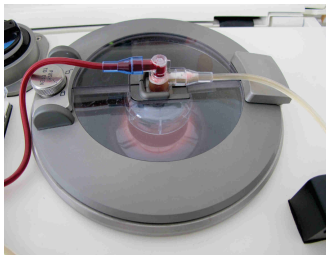
c-erb/B2 gene amplification

Therapeutic consequences

A combined immunotherapy consisting of escape resistant Natural Killercells (NK cells) and heat-shock proteines can specifically attack and destroy Cancer Stem Cells.[15]
Result: remission instead of progression.



NK cells



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