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PP80. CAVEOLIN-1 IMPLICATED AS A PRO-INVASIVE GENE IN HIGH-GRADE GLIOMA CELL MODELS: IMPLEMENTATION OF A 3D SPHEROID MATRIX INVASION ASSAY

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INTRODUCTION: The poor prognosis associated with Glioblastoma multiforme (GBM) is multifactorial but includes the capacity of residual tumour cells not removed by surgery and resistant to radio-/chemo-therapy undergoing diffuse invasion into the surrounding brain tissue. Caveolin-1 (Cav-1) is the major structural and functional component of caveolae. In a number of tumour types Cav-1 is recognised to participate in cytoskeletal rearrangement, integrin-mediated adhesion and/or matrix remodelling. We proposed Cav-1 serves to promote invasion of GBM cells. To investigate this we have employed in an in-vitro 3D cellular invasion assay.

METHOD: The human GBM cell lines, UP007 and UP029 established from primary cultures of biopsy-derived brain tumours (University of Portsmouth), U-87 MG (ECACC) and U-373 MG (ECACC) were genetically modified to stably knock-out Cav-1 using a Lentiviral Cav-1 shRNA approach; corresponding stably transfected non-target (NT) shRNA cell lines were generated as controls. Neuropheres were formed and embedded within an extracellular matrix (Matrigel™). Over a two-/four-day period (depending on cell line) the migration of cells away from the neurophere core (CORE) was quantified by image capture and processing (Image J) using a custom-developed MatLab script for pixel density analysis indicative of the density of migrating cellular material.

RESULTS: Cav-1 knockout resulted in significant (P0.05) towards reduced invasion. Depending upon the cell line the Cav-1 knockdown also resulted in reduced size and cellular density of the neurosphere core (UP007 and UP029) indicative of reduced prolif- Abstracts i22 NEURO-ONCOLOGY • january 2017 eration and/or cell survival capacity.

CONCLUSION: Using an in-vitro 3D cellular invasion assay we have found Cav-1 expression in a series of three GBM cell lines to promote cellular invasion capacity. Ongoing studies are addressing signalling mechanisms and the influence of the microenvironment.

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