BI-18. CELLULAR MICROPARTICLES AS BLOOD-BORNE ENDOTHELIAL BIOMARKERS IN PATIENTS WITH MALIGNANT GLIOMAS
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BACKGROUND: Identification of reliable biomarkers of tumor vascularity and/or angiogenesis in the peripheral circulation would be useful for screening, diagnosis, prognosis, assessment of treatment efficacy and surveillance in patients with malignant gliomas (MG). Cellular microparticles (MP) are small blood-borne fragments shed from the cell surface after inflammatory activation, injury or apoptosis. MP from vascular endothelial cells in highly angiogenic brain tumors like MG express a specific isoform of aminopeptidase N, CD13, not found on normal endothelium. MP may also contain CD 142 or tissue factor, an initiator of the coagulation cascade, which may reflect thromboembolic risk in patients with MG. METHODS: After obtaining informed consent, serial samples of peripheral blood were obtained from 26 patients with MG prior to the initiation of therapy for newly diagnosed or recurrent disease and at each subsequent clinic visit. Blood was centrifuged and MP were extracted from the platelet-free fraction. MP were labelled with fluorescently tagged antibodies to CD13, CD142 and CD144 (a marker of all endothelial cells) and expression was quantified using established flow cytometric techniques. RESULTS: To date, 14 samples from 7 patients with MG have been analyzed. Using calibration beads, we confirmed that our MP ranged from 0.2 to 1.5 microns in size. Fluorescent antibody expression (% of total MP analyzed in each patient) was as follows: CD13 = 18.2% (range 15 - 25); CD 142 = 9.3% (range 6 - 12); CD 144 = 16.1% (range 7 - 27). CONCLUSIONS: Endothelial markers on MPs are routinely detectable at significant levels in the peripheral blood of patients with MG. When correlated with clinical, laboratory and imaging data, MP have the potential to be useful circulating biomarkers of the vascular compartment in MG.