Abstracts

PM-11. DEVELOPMENT OF A HUMAN MENINGIOMA MOUSE XENOGRAFT MODEL WITH THE SPONTANEOUSLY IMMORTAL CELL LINE KCI-MENG1
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BACKGROUND: There is a paucity of effective therapies for recurrent/aggressive meningiomas. Establishment of improved in vitro and in vivo meningioma models will facilitate development and testing of novel therapeutic approaches. METHODS: A primary meningioma cell line was generated from a patient harboring a WHO grade I olfactory groove meningioma. The cell line was extensively characterized by performing analysis of growth kinetics, immunocytochemistry, telomerase activity, karyotype, and genomic analysis. A xenograft model of human meningioma using immunocompromised SCID mice was also developed. RESULTS: Histopathology was consistent with a WHO grade I typical meningioma composed of meningothelial cells, whorls, and psammoma bodies. The original tumor and the early passage primary cells shared the standard immunohistochemical profile. Low-passage KCI-MENG1 cells were composed of two cell types with spindle and round morphologies, showed linear growth curve, had very low telomerase activity, and were composed of two distinct unrelated clones on cytogenetic analysis. In contrast, high-passage cells were homogeneously round, rapidly growing, had high telomerase activity, and were composed of a single clone with a near-triploid karyotype containing 64-66 chromosomes with numerous aberrations. Following subcutaneous transplantation of low- or high-passage cells into SCID mice, tumor tissue with typical histological features of meningothelial meningioma was found. Cultured cells isolated from the xenograft tumors also had the near-triploid karyotype and the same immunostaining profile. CONCLUSIONS: The newly-established spontaneously immortal KCI-MENG1 meningioma cell line and human meningioma mouse xenograft model will provide a biologically relevant platform from which to investigate meningioma tumor biology and disease progression as well as to develop novel therapeutic targets to improve treatment options for all grades of meningiomas.