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POTENTIAL ROLES OF CYTOSKELETAL PROTEIN IN GLIOBLASTOMA CHEMORESISTANCE

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INTRODUCTION: Glioblastoma is a highly malignant neoplasm for which temozolomide is currently the standard chemotherapeutic agent. Adducin 3 (ADD3) is a cytoskeletal protein associated with chemoresistance but its role in glioblastoma has not been investigated.

MATERIALS AND METHODS: Using an in vitro model of glioblastoma cells with acquired temozolomide-resistance (D54-R), the expression of ADD3 and stem cells markers were compared to temozolomide-sensitive glioblastoma cells (D54-S). Immunofluorescence staining was used to investigate the expression pattern of ADD3 and cancer stem cells markers in temozolomide-resistance subclone of glioblastoma cells and glioma neurospheres.

RESULTS: Chemoresistant cells were found to have upregulated ADD3 expression and were particularly intense in a subgroup of chemoresistant cells. Furthermore, from immunofluorescence of CD133+ glioma neurospheres, we also found co-expression of ADD3 and CD133.

CONCLUSIONS: The findings suggested a possible link between cytoskeletal protein expression, cancer stem cell phenotypes and temozolomide-resistance in human glioblastoma.