

Alternating Electric fields-Induced Senescence in Glioblastoma

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Abstract : Innovations have conjured up a mode of treating GBM cancer cells in the newly diagnosed patients in a period of 4.9 months at an improved median OS, which brings along only a few minor side effects in the phase III of the clinical trial. This mode has been termed the Alternating Electric Fields (AEF). The study at hand is aimed at determining whether the AEF treatment is beneficial in sensitizing the GBM cancer cells through the process of increasing the AEF -induced senescence. The methodology to obtain the findings for this research ranged across various components, such as obtaining and testing SA- β -gal staining, flow cytometry, Western blotting, morphology, and Positron Emission Tomography (PET) / Computed Tomography (CT), immunohistochemical staining and microarray. The number of cells that displayed a senescence-specific morphology and positive SA- β -Gal activity gradually increased up to 5 days. These results suggest that p16, p21 and p27 are essential regulators of AEF -induced senescence via NF- κ B activation. The results showed that the AEF treatment is functional in enhancing the AEF -induced senescence in the GBM cells via an apoptosis- independent mechanism. This research concludes that this mode of treatment is a trustworthy protocol that can be effectively employed to overcome the limitations of the conventional mode of treatment on GBM.

Keywords : alternating electric fields, senescence, glioblastoma, cell death

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