Anti-glioma Agents and Hyperbaric Oxygen for Prospective Therapeutic Approaches

Robert P. Ostrowski, Emanuela B. Pucko

Department of Neurooncology, Mossakowski Medical Research Institute, Polish Academy of Sciences, Warsaw, Poland

Adjuvant treatments for high-grade gliomas (HGGs) are being explored to improve therapeutic efficacy. Tumor hypoxia poses a major therapeutic challenge. Hyperbaric oxygen (HBO) has potential of to counteract hypoxia and therapeutic resistance in HGG, with particular emphasis on glioblastoma.

HBO has been investigated as an adjuvant treatment to combat HGG alongside radiotherapy and chemotherapy, including new investigational compounds and approaches, with predominantly favorable outcomes in overall treatment efficacy as revealed by both clinical and experimental studies.

Thus the growing body of laboratory and clinical data seems to suggest that HBO should be considered a promising component of modern oncological strategies for patients with HGG.

Among the numerous anticancer phytopharmaceuticals, nutraceuticals, and chemical compounds amenable for this treatment paradigm, research on curcumin and isothiourea as well as their derivatives may lay the groundwork for promising future research directions.

However, further studies along with additional clinical trials are needed to substantiate the effects of HBO as an adjuvant treatment, on tumor/immune interactions, stemness, therapy resistance, and patients' quality of life. The sound theoretical background and solid research data will allow not only the selection of existing compounds and modalities amenable to neuro-oncological combination therapies with HBO but also the relevant knowledge will enable novel developments, from the inception crafted for such combination therapies.

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