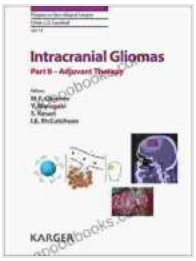
Intracranial Gliomas: Part II - Adjuvant Therapy: Reshaping the Frontiers of Neurological Surgery



Intracranial Gliomas Part II - Adjuvant Therapy (Progress in Neurological Surgery Book 31)

by Patrick M. Whitehead

4 out of 5

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Intracranial gliomas, malignant tumors originating within the brain, pose a significant challenge to the field of neurological surgery. Despite advancements in surgical techniques and primary treatment modalities, the recurrence of gliomas remains a major concern, often leading to devastating outcomes for patients. To address this challenge, adjuvant therapies, administered after primary surgery, have emerged as a cornerstone of treatment strategies, offering hope for improved patient outcomes.

Radiation Therapy

Radiation therapy, a widely employed adjuvant therapy, utilizes high-energy radiation to target and destroy cancer cells. In the context of intracranial gliomas, radiation therapy is typically administered post-operatively to eliminate any residual tumor cells and reduce the risk of recurrence. Techniques such as conformal radiation therapy and intensity-modulated

radiation therapy (IMRT) allow for precise targeting of the tumor while sparing surrounding healthy tissues.

Radiation therapy has been shown to improve survival rates and reduce the risk of local recurrence in patients with intracranial gliomas. However, it can also carry potential side effects, including cognitive impairment, fatigue, and hair loss. Careful patient selection and treatment planning are essential to minimize these risks and optimize therapeutic outcomes.

Chemotherapy

Chemotherapy involves the use of cytotoxic drugs to kill rapidly dividing cancer cells. In the treatment of intracranial gliomas, chemotherapy is often administered concurrently with radiation therapy or as a standalone therapy for patients who are not candidates for radiation. Common chemotherapeutic agents used include temozolomide, carmustine, and lomustine.

Chemotherapy can be effective in controlling tumor growth and improving survival rates. However, it can also lead to side effects such as nausea, vomiting, hair loss, and bone marrow suppression. The development of targeted chemotherapeutic agents, which specifically target cancer cells, holds promise for reducing the toxicity associated with conventional chemotherapy.

Targeted Therapy

Targeted therapy, a relatively recent advancement in cancer treatment, involves the use of drugs that specifically inhibit molecular targets involved in tumor growth and progression. In the case of intracranial gliomas,

targeted therapies have shown great promise in improving patient outcomes.

One of the most well-established targeted therapies for intracranial gliomas is bevacizumab, which targets vascular endothelial growth factor (VEGF),a protein that promotes tumor angiogenesis. Bevacizumab has been shown to improve progression-free survival and overall survival in patients with recurrent glioblastoma.

Immunotherapy

Immunotherapy, an exciting frontier in cancer treatment, harnesses the power of the immune system to fight cancer. In the context of intracranial gliomas, immunotherapy aims to stimulate the immune system to recognize and attack tumor cells.

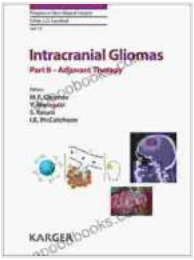
Several immunotherapeutic approaches are currently being investigated for the treatment of intracranial gliomas. These include immune checkpoint inhibitors, which block inhibitory molecules on immune cells, and adoptive cell therapies, which involve modifying immune cells to enhance their anti-tumor activity.

Adjuvant therapies have revolutionized the treatment of intracranial gliomas, offering hope for improved patient outcomes. Radiation therapy, chemotherapy, targeted therapy, and immunotherapy, each with unique mechanisms of action, play a vital role in controlling tumor growth, reducing recurrence, and prolonging survival.

As research continues to unravel the molecular complexities of intracranial gliomas, the development of novel adjuvant therapies holds great promise

for further improving patient outcomes. Personalized treatment approaches, tailored to the individual genetic and molecular profile of each tumor, are expected to play a significant role in the future of glioma management.

The relentless pursuit of scientific advancements and the dedication of clinicians and researchers are driving the field of neurological surgery forward, offering renewed hope for patients battling intracranial gliomas.



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