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Radiation Therapy for Meningioma: Effective Strategies for Tumor Control and Symptom Relief

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Image Article

Meningioma is a common type of brain tumor that originates from the meninges, the protective membranes surrounding the brain and spinal cord. While meningiomas are typically benign, they can still cause significant symptoms and require treatment. In cases where surgical removal is not feasible or complete resection is not possible, radiation therapy has emerged as a highly effective treatment approach.

Radiation therapy also known as radiotherapy, utilizes high-energy X-rays or other types of radiation to target and destroy cancer cells. It is a non-invasive procedure that focuses on the precise area where the tumor is located, minimizing damage to surrounding healthy tissue. Radiation therapy can be used as the primary treatment for meningiomas or as an adjuvant therapy following surgery to eliminate any remaining tumor cells [1].

The primary goal of radiation therapy for meningioma is to halt tumor growth and reduce the size of the tumor and alleviate associated symptoms. The procedure is typically delivered in multiple sessions, known as fractions, spread over a period of several weeks. Each session lasts only a few minutes, and patients can usually go about their daily activities before and after treatment.

The figure above illustrates the process of radiation therapy for meningioma. It showcases a patient positioned on a treatment table while a linear accelerator, a specialized machine that generates high-energy radiation, delivers targeted beams to the tumor site. The radiation oncology team, including radiation oncologists and therapists, carefully plan and administer the treatment, ensuring that the dosage and radiation field are precisely tailored to the patient's specific needs [2].

The effectiveness of radiation therapy for meningioma is well-established. Studies have shown high rates of tumor control and favorable patient outcomes. The treatment not only stops tumor growth but also improves symptoms such as headaches, seizures, and neurological deficits caused by the tumor's presence.

One of the key advantages of radiation therapy is its ability to spare healthy brain tissue from damage, thanks to advanced imaging techniques and precise targeting. This precision is crucial in meningioma cases, as these tumors often develop near critical structures within the brain. The treatment is designed to deliver maximum radiation dose to the tumor while minimizing exposure to surrounding healthy tissues.

Radiation therapy is generally well-tolerated, with side effects that are often temporary and manageable. Common side effects may include fatigue, temporary hair loss in the treated area, mild skin reactions, and headache. The radiation oncology team closely monitors patients throughout their treatment, ensuring any side effects are promptly addressed and managed (Figure 1).

In conclusion, radiation therapy has become an indispensable treatment modality for meningioma, offering excellent tumor control and symptom relief. With its precision and ability to spare healthy brain tissue, it provides an effective therapeutic option for patients who are not suitable for surgical intervention or require additional treatment after surgery. By utilizing advanced techniques and technologies, radiation therapy continues to play a crucial role in improving outcomes and enhancing the quality of life for individuals with meningiomas.

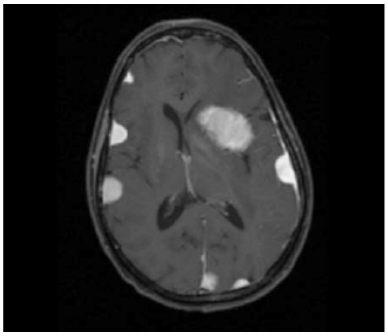

Figure 1: Image showing radiation induces meningiomas.

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Conflict of Interest

None

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