

RADIATION THERAPY'S FIGHT AGAINST MENINGIOMAS

Introduction

Meningiomas are one of the most common primary brain tumors and make up nearly one-third of all newly diagnosed primary brain tumors.³ Meningiomas can occur at any age but are more commonly found in the elderly, however this may be due to the common occurrence of asymptomatic tumors.

If the meningioma is found, many different factors are taken into account to determine the treatment options for each patient and if any treatment will be necessary.

While meningiomas may be left untreated if symptoms are not present, the first step toward the treatment of a meningioma is most commonly surgery. Radiation therapy however is commonly administered as well and sometimes the only treatment available.³

While radiation therapy is an effective way to treat a meningioma, there are some common side effects that do occur when using radiation therapy.

Classifications/grades

The World Health Organization (WHO) recognizes three grades of meningiomas.⁷

- Grade I is considered benign⁷
- Grade II is referred to as atypical meningiomas⁷
- Grade III are called anaplastic meningiomas or malignant meningiomas⁷

The classification of the meningioma greatly influences the treatment selection and outcome of the meningioma. With the help of the classification they can determine what steps will be made in the course of treatment and what kind of options they will have. The treatment that is selected for the specific meningioma is going to greatly affect what kind of side effects as well as the extent of the side effects that the patient is going to experience.

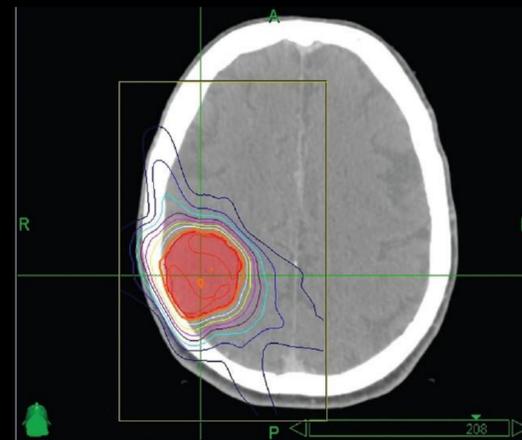
Radiation therapy/surgery

The overall main goal of radiation therapy is to deprive the cancer cells of their multiplication or cell division potential.² Surgery is the preferred treatment option, to remove the tumor if it is possible. Depending on the size and grade of the tumor, if it is a higher grade, radiation therapy is generally considered as well to prevent it from returning later on.¹ The overall goal of surgery is to resect the entire tumor, however if that is not possible than an incomplete resection may occur, in hopes to remove as much of it as possible and radiation therapy will most likely be used as well. If radiation therapy is used after surgery, which is referred to as adjuvant therapy, the radiation will destroy the microscopic tumor cells that may have possibly been left behind due to the high grade tumor or if it was unable to be completely removed.²

References

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Treatment planning image of an 81-year-old woman with a right parietal meningioma. This patient was treated with 25 Gy in five fractions to the solid orange line. The shaded red volume is the intact meningioma which was 17 cm



Bria C, Wegner RE, Clump DA, Vargo JA, Mintz AH, Heron DE, Burton SA. Fractionated stereotactic radiosurgery for the treatment of meningiomas. *J Can Res Ther* 2011;7:52-7

FSRT

Fractionated stereotactic radiation therapy (FSRT), is considered to be a more advanced form of radiation therapy and is a more precise way of delivering radiation therapy. FSRT combines the precision of stereotactic positioning with the radiobiological advantages of fractionation.⁵ FSRT is a more effective and an alternative treatment for large tumors in lesions that are close to organs that may be at risk.⁵ FSRT delivers smaller amounts of radiation over a longer period of time, the tissues in the brain are able to tolerate this better than receiving one large dose of radiation at one time.² In anaplastic meningiomas, the malignant more aggressive form, fractionated radiotherapy is administered regardless of the degree of resection. This is to ensure the removal of all the cancer cells since this is a more aggressive form of meningioma.³

Conclusion

Radiation therapy remains an important component of all cancer treatment, approximately 50% of all cancer patients will receive radiation therapy during their course of treatment and it contributes towards 40% of curative treatment for cancer.² Since meningiomas are one of the most common brain tumors and increase with age it is important that research continues to help increase the knowledge and technology that is being used to treat them.

Side effects

It can cause both acute and chronic side effects. Some examples of acute side effects are fatigue, hair loss, skin irritation, short-term memory loss, and brain and tissue swelling.⁶ Long-term or chronic effects could be radiation necrosis, damage to healthy brain tissue, harm to the pituitary gland, loss of some brain functions, and even developing a second cancer due to the increase in radiation from treatment of the original tumor.⁶ While there are many side effects, the length of the recovery time for a patient being given radiation therapy differs with every single person.⁴ The general health before the diagnosis as well as during, the location and size of the tumor will have a significant role in determining the recovery time.⁴