Possible Side Effects of Radiation Treatment for Brain Tumors

Radiation used to destroy cancer cells can also damage normal cells that are in the treatment area or the beam path. Side effects from radiation treatment can vary, depending on the area of the body being treated. Side effects are caused by the cumulative effect of radiation on the cells. This means they develop over time and you may not experience any side effects until a few weeks into treatment. Side effects may be unpleasant, but there are treatments to help you deal with them. Most side effects are temporary, disappearing little by little after therapy is complete.

Most radiation oncologists will see their patients once a week while you are receiving treatment. This visit with the healthcare team is an opportunity for you to ask questions, talk about any side effects, and make a plan to manage your side effects. However, you can report concerning symptoms at any time to your treatment team.

Acute (Short-Term) Side Effects

The following list includes some of the most common side effects of radiation therapy for brain tumors. Remember that the treatment can affect each patient differently, and you may not experience these particular side effects. Side effects can also be different depending on your dose and treatment schedule. Talk with your radiation oncologist about what side effects you can expect from your specific treatment.

- **Fatigue** is very common with radiation treatment and tends to begin a few weeks into therapy. Fatigue typically goes away slowly over the weeks and months following treatment.
- **Hair loss** may occur where you received radiation. Hair typically starts to regrow a few months after treatment. However, your hair might not grow back exactly as it was before treatment and for some, the hair loss becomes permanent.
- **Muffled hearing:** Your hearing may become muffled during treatment. This typically resolves in 2-4 weeks after finishing treatment.
- **Skin irritation:** The skin in the treatment area may become red, irritated, dry, or sensitive. It may start to look like a sunburn. Treat the skin gently to avoid further irritation, and bathe carefully, using only warm water and mild soap. Avoid scented lotions and soaps, as these may cause more irritation. Avoid sun exposure, which can worsen the irritation.
- **Some short-term memory loss and difficulty thinking** can occur if you are treated with whole-brain radiation therapy.
- **Brain tissue swelling** can develop during treatment. You may get a headache or feel pressure in your head if this occurs. The health care team watches for signs of this problem and may prescribe medications to decrease swelling. Let the team know if you experience these symptoms.

Chronic (Long-Term) Side Effects

The side effects mentioned above tend to occur during or shortly after treatment. Long-term effects can happen months to years after treatment has ended. The risks of long-term effects vary depending on the treatment area, the total dose that is given, and the radiation techniques that were used, as these continue to develop and improve.

Though the risk is low, you should be aware of these possible long-term effects:

- There is a low risk of developing a second cancer in or near the radiation field. These are called secondary cancers, and they develop as a result of the exposure of healthy tissue to radiation. Modern radiation techniques are designed to limit this exposure, but it is not always possible to prevent all exposure and still achieve the desired outcomes.
- **Radiation necrosis:** Rarely, a mass of dead (necrotic) tissue forms at the site of the tumor. If this occurs, it usually develops months to years after radiation is given. Surgery may be needed to remove the necrotic tissue.
- **Damage to healthy brain tissue:** Although rare, this side effect can cause headaches, seizures, or even death.
• Harm to the pituitary gland and other areas of the brain can happen, which can affect hormone levels in the body, including thyroid and sex hormones. Damage to the pituitary gland can affect future fertility for women and cause sexuality concerns for men. Your provider may prescribe synthetic hormones to manage these changes.
• Loss of some brain function can occur if large areas of the brain receive radiation. There may also be other symptoms that develop as a result of damage to healthy brain tissue. These symptoms depend on what the treated area of the brain controls and how much radiation was given. These risks must be weighed against the risks of not using radiation and having less impact on the tumor.

**Stereotactic Radiosurgery (SRS) Side Effects**

Side effects of radiosurgery are usually related to sending high doses of radiation to particular areas of the brain. For instance, if you are treated for an acoustic neuroma (a tumor involving the nerve that controls hearing), you might lose some hearing. Treatment for trigeminal neuralgia can lead to tingling or numbness of the face. Talk to your care team about potential side effects; they will be able to tell you what you might expect in your case.

After treatment, talk with your oncology team about receiving a survivorship care plan, which can help you manage the transition to survivorship and learn about life after cancer. You can develop your own plan using the OncoLife Survivorship Care Plan tool.