

EYE HEALTH

High doses of radiation to the brain, eye, or eye socket (orbit) during treatment for cancer can have a long-lasting affect on the eyes. Radioiodine treatment and chronic graft versus-host disease (an immune response that can develop after bone marrow or stem cell transplant) can also affect the eyes. Because vision can have a significant impact on daily living, it is important for survivors who received these treatments to have their eyes checked regularly.

WHAT EYE PROBLEMS CAN DEVELOP FOLLOWING TREATMENT FOR CANCER?

Cataracts: Clouding of the lens of the eye. When this happens, light cannot pass through the lens easily. Common symptoms of cataracts include painless blurring of vision, sensitivity to light and glare, double vision in one eye, poor night vision, fading or yellowing of colors, and the need for frequent changes in glasses or contact lens prescriptions.

Xerophthalmia: Dry eyes resulting from decreased tear production due to radiation or chronic graft-versus-host disease. Symptoms include pain at the surface of the eye and light sensitivity.

Lacrimal duct atrophy: Shrinking of the lacrimal duct, which drains tears from the eye. Lacrimal duct atrophy can result in problems with increased tearing. This can be caused by radiation to be eye or orbit, or by radioiodine (I-131) therapy given for treatment of thyroid cancer.

OTHER EYE PROBLEMS

The following eye problems are less common and are usually seen only in survivors who had higher-dose radiation treatments directed at the eye or orbit:

- **Orbital hypoplasia:** Underdevelopment of the eye and surrounding tissues, caused by radiation to the eye or orbit. This can result in a small eye and orbit (orbital hypoplasia).
- **Enophthalmos:** Sunken eyeball within the orbit as a result of radiation.
- **Keratitis:** Inflammation of the cornea (the clear, outer surface of the eye). This can cause pain at the surface of the eye and light sensitivity.
- **Telangiectasias:** Enlargement of blood vessels in the white part of the eye. These do not usually cause any symptoms, but are sometimes bothersome because of their appearance.
- **Retinopathy:** Damage to the retina (the back surface of the eye where visual information is passed from the eye to the brain). Painless vision loss is the major symptom of retinopathy.

- **Maculopathy:** Damage to the macula (area of central vision within the retina), which may result in blurred vision.
- **Optic chiasm neuropathy:** Damage to the nerves that send visual information from the eye to the brain. This can result in vision loss.
- **Papillopathy:** Swelling of the optic disc (area where the optic nerve enters the eye).
- **Glaucoma:** Increased pressure within the eye. This can damage the optic nerve and result in vision loss.

WHAT CANCER THERAPIES INCREASE THE RISK OF DEVELOPING THESE EYE COMPLICATIONS?

- Radiation therapy
- Radioiodine (I-131) treatment for thyroid cancer (increased risk for lacrimal duct atrophy)
- Chronic graft versus host disease following bone marrow, cord blood, or stem cell transplant (increased risk for xerophthalmia)
- Diabetes mellitus (increased risk for problems involving the retina and optic nerve)
- High blood pressure (increased risk of optic chiasm neuropathy)
- Frequent exposure to sunlight (increased risk for cataracts)
- Certain chemotherapy drugs, such as, actinomycin-D and doxorubicin, which can increase the risk of eye problems when given together with radiation.

WHAT MONITORING IS RECOMMENDED?

Evaluation by an ophthalmologist at least once a year is recommended for any one who:

- Had a tumor involving the eye
- Had radiation to the brain, eye, or orbit at doses of 30 Gy (3000 cGy) or higher
- Has graft versus host disease (as a result of bone marrow, cord blood, or stem cell transplant)

Examination by an ophthalmologist should include:

- vision screening,
- examination for cataracts,
- full examination of the internal structures of the eye

Evaluation by an ocularist (a trained person who makes and fits artificial eyes) at least once a year is recommended for anyone who has had:

- An eye removed because of cancer treatment and/or complications related to treatment
- An artificial eye (prosthesis) that does not fit well

Evaluation by an ophthalmologist is recommended on an as-needed basis for people who had Radioiodine (I-131) treatment, if they develop excessive tearing.

If you develop any of the following symptoms, seek prompt medical evaluation. In some cases, referral to an ophthalmologist may be needed:

- Blurry vision
- Double vision
- Blind spots
- Sensitivity to light
- Poor night vision
- Persistent irritation of surface of eye or eyelids
- Excessive tearing/watering of eyes
- Pain within the eye
- Dry eyes

WHAT CAN BE DONE IF THERE IS IMPAIRED VISION?

If impaired vision is detected, it is important to follow the recommendations of your ophthalmologist regarding treatment. If vision is not correctable, services are available in most communities to assist people with visual impairments.

HOW CAN I PROTECT MY VISION?

It's important to protect your eyes whether or not you have treatment-related eye disorders. Precautions you can take include:

- Wear sunglasses with UV protection when in bright sunlight.
- When participating in sports, be sure to select protective eyewear that is appropriate for the sport. Eyewear worn for sports should be properly fitted by an eye care professional.
- Be careful when working with hazardous household chemicals.
- Wear protective eyewear when using a lawnmower, power trimmer, or edger, and when working with dangerous equipment in the workshop.

Works Cited

Adapted from Children's Oncology Group Long-Term Follow-Up Guidelines for Survivors of Childhood, Adolescent, and Young Adult Cancers
www.survivorshipguidelines.org

