Treating Eye Cancer

Making treatment decisions

After an eye cancer is found and staged, your cancer care team will discuss your treatment options with you. Depending on the type and stage of the cancer and other factors, treatment options for eye cancer can include:

- Surgery
- Radiation therapy
- Laser therapy
- Chemotherapy
- Targeted therapy

Sometimes, more than one of type of treatment is used. In choosing the best treatment plan for you, some important factors to consider include the location and stage of the cancer, your overall health, the chances of curing the disease, and the possible effect of the treatment on vision. See “Treating uveal (eye) melanoma by location and stage” or “Treating intraocular (eye) lymphoma” to learn about common treatment plans.

You may have different types of doctors on your treatment team, depending on the stage of your cancer and your treatment options. These doctors may include:

- An ophthalmologist: a doctor who specializes in treating diseases of the eye
- An ocular oncologist: a doctor (usually an ophthalmologist) who specializes in treating cancers of the eye
- A radiation oncologist: a doctor who treats cancer with radiation therapy
- A medical oncologist: a doctor who treats cancer with medicines such as chemotherapy
Many other specialists might be part of your treatment team as well, including physician assistants (PAs), nurse practitioners (NPs), nurses, physical therapists, social workers, and other health professionals. See Health Professionals Associated With Cancer Care for more on this.

It is important to discuss all of your treatment options, including their goals and possible side effects, with your doctors to help make the decision that best fits your needs. It’s also very important to ask questions if you’re not sure about something. (See “What should you ask your doctor about eye cancer?” for some questions to ask.)

Because eye melanomas and lymphomas are rare, no matter what treatment you decide on, it should be done by doctors who are experienced in treating people with these cancers. If time permits it is often a good idea to seek a second opinion from an experienced doctor as well. A second opinion can provide more information and help you feel more confident about your chosen treatment plan.

Treatments for eye cancers might affect your vision. Doctors try to preserve vision in the eye whenever possible, but this may not always be the best choice. Eye cancers can often be fatal if left untreated, and some patients must be given treatment regardless of the possible damage to the eye. On the other hand, some eye melanomas are small, grow very slowly (if at all), and can be watched carefully without treatment. This is why it is important to get the opinion of a skilled specialist in this field before deciding on treatment.

**Thinking about taking part in a clinical trial**

Clinical trials are carefully controlled research studies that are done to get a closer look at promising new treatments or procedures. Clinical trials are one way to get state-of-the-art cancer treatment. In some cases they may be the only way to get access to newer treatments. They are also the best way for doctors to learn better methods to treat cancer. Still, they are not right for everyone.

If you would like to learn more about clinical trials that might be right for you, start by asking your doctor if your clinic or hospital conducts clinical trials. See Clinical Trials to learn more.

**Considering complementary and alternative methods**

You may hear about alternative or complementary methods that your doctor hasn’t mentioned to treat your cancer or relieve symptoms. These methods can include
vitamins, herbs, and special diets, or other methods such as acupuncture or massage, to name a few.

Complementary methods refer to treatments that are used along with your regular medical care. Alternative treatments are used instead of a doctor’s medical treatment. Although some of these methods might be helpful in relieving symptoms or helping you feel better, many have not been proven to work. Some might even be dangerous.

Be sure to talk to your cancer care team about any method you are thinking about using. They can help you learn what is known (or not known) about the method, which can help you make an informed decision. See the Complementary and Alternative Medicine section to learn more.

Help getting through cancer treatment

Your cancer care team will be your first source of information and support, but there are other resources for help when you need it. Hospital- or clinic-based support services are an important part of your care. These might include nursing or social work services, financial aid, nutritional advice, rehab, or spiritual help.

The American Cancer Society also has programs and services – including rides to treatment, lodging, and more – to help you get through treatment. Call our National Cancer Information Center at 1-800-227-2345 and speak with one of our trained specialists.

The treatment information given here is not official policy of the American Cancer Society and is not intended as medical advice to replace the expertise and judgment of your cancer care team. It is intended to help you and your family make informed decisions, together with your doctor. Your doctor may have reasons for suggesting a treatment plan different from these general treatment options. Don’t hesitate to ask him or her questions about your treatment options.

Surgery for Eye Cancer

Surgery is used to treat some intraocular (eye) melanomas, but it is used less often than in the past as the use of radiation therapy has grown. Surgery is not used to treat intraocular lymphoma.
The type of surgery depends on the location and size of the tumor. Patients will be under general anesthesia (in a deep sleep) during these operations, and they usually will leave the hospital 1 or 2 days afterward. The operations used to treat people with eye melanoma include:

**Iridectomy:** Removal of part of the iris (the colored part of the eye). This may be an option for very small iris melanomas.

**Iridotrabeculectomy:** Removal of part of the iris, plus a small piece of the outer part of the eyeball. Small iris melanomas may be treated with this technique.

**Iridocyclectomy:** Removal of a portion of the iris and the ciliary body. This operation is also used for small iris melanomas.

**Transscleral resection:** Surgically removing just a melanoma of the ciliary body or choroid. This type of surgery should only be done by doctors in cancer centers with a lot of experience in treating eye melanomas, because it is hard to remove the tumor without damaging the rest of the eye. This could lead to severe vision problems.

**Enucleation:** Removal of the entire eyeball. This is used for larger melanomas, but it may also be done for some smaller melanomas if vision in the eye has already been lost or if other treatment options would destroy useful vision in the eye, anyway.

During the same operation, an orbital implant is usually put in to take the place of the eyeball. The implant is made out of silicone or hydroxyapatite (a substance similar to bone). It is attached to the muscles that moved the eye, so it should move the same way as the eye would have. Within a few weeks after surgery, you visit an ocularist (a specialist in eye prostheses) to be fitted with an artificial eye, a thin shell that fits over the orbital implant and under the eyelids. The artificial eye will match the size and color of the remaining eye. Once it is in place, it will be hard to tell it apart from the real eye.

**Orbital exenteration:** Removal of the eyeball and some surrounding structures such as parts of the eyelid and muscles, nerves, and other tissues inside the eye socket. This surgery is not common, but it might sometimes be used for melanomas that have grown outside the eyeball into nearby structures. As with enucleation, an artificial eye might be placed in the socket after surgery.

**Possible risks and side effects of surgery**

All surgery carries some risk, including the possibility of pain, bleeding, blood clots, infections, and complications from anesthesia.
Surgery on the eye can lead to the loss of some or all of the vision in that eye. Enucleation and orbital exenteration result in complete and immediate vision loss in the eye. Other surgeries can also cause problems leading to a loss of vision, which can occur later on. In some cases, vision may have already been damaged or lost because of the cancer.

Removal of the eyeball (enucleation) obviously can affect a person’s appearance. As noted above, an artificial eye can be put in place to help minimize this.

References

See all references for Eye Cancer

(https://www.cancer.org/content/cancer/en/cancer/eye-cancer/references.html)

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Radiation Therapy for Eye Cancer

Radiation therapy uses high-energy x-rays or other types of radiation to kill cancer cells. It is a common treatment for intraocular (eye) melanoma. Radiation therapy can often save some vision in the eye, although sometimes this might be lost anyway if the radiation damages other parts of the eye. An advantage over surgery¹ is that the eye structure is preserved, which can result in a better appearance after treatment.

Different types of radiation therapy can be used to treat eye cancers.

Brachytherapy (episcleral plaque therapy)

In this form of radiation therapy, the doctor places small pellets (sometimes called seeds) of radioactive material directly into or very close to the cancer. This has become the most common radiation treatment for most eye melanomas. Studies have shown that in many cases it is as effective as surgery (enucleation).

The pellets of radioactive material are placed inside a small carrier (shaped like a very small bottle cap), which is sewn on the outside of the eyeball with tiny stitches to keep it
in place. The carrier is made of gold or lead to shield nearby tissues from the radiation. The radiation from the pellets travels a very short distance, so most of it will be focused only on the tumor.

An operation is needed to put the plaque (radioactive element and carrier) in place. This surgery usually takes 1 or 2 hours and can be done with local anesthetic (numbing medicine) and sedation. The plaque is usually kept there for 4 to 7 days, depending on the size of the tumor and the strength of the radiation source. You will probably remain in the hospital during this time. Surgery to remove the plaque usually takes less than an hour, and you will probably be able to go home the same day. The full effect of the radiation on the tumor is not seen for 3 to 6 months.

This treatment cures about 9 out of 10 small tumors and can preserve vision in some patients, depending on what part of the eye the melanoma is in. The outlook for vision is not as good if the tumor is very close to the optic nerve, which carries visual images from the eye to the brain.

**External beam radiation therapy**

In this approach, radiation from a source outside the body is focused on the cancer. This is the type of radiation therapy used to treat eye lymphomas. For eye melanomas the use of this type of radiation therapy is generally limited to newer methods that focus narrow beams of radiation on the tumor.

**Conformal proton beam radiation therapy:** Instead of using x-rays as in standard radiation therapy, this approach focuses proton beams on the cancer. Unlike x-rays, which release energy both before and after they hit their target, protons cause little damage to tissues they pass through and then release their energy after traveling a certain distance. This means that proton beam radiation may be able to deliver more radiation to the tumor and do less damage to nearby normal tissues.

Getting treatment is much like getting an x-ray, but the dose of radiation is much higher. In most cases, the total dose of radiation is divided into daily fractions (usually given Monday thru Friday) over several weeks. The treatment is not painful.

The machines needed to make protons are expensive, and there are only a handful of them in use in the United States at this time.

**Stereotactic radiosurgery:** This type of treatment delivers a large, precise radiation dose to the tumor area in a single session. (There is no actual surgery in this treatment.) The radiation can be delivered in one of two ways.
In one approach, radiation beams are focused at the tumor from hundreds of different angles for a short period of time. The machine used to deliver this type of radiation is known as a *Gamma Knife*.

A similar approach uses a movable linear accelerator (a machine that creates radiation) that is controlled by a computer. Instead of delivering many beams at once, this machine moves around the head to deliver radiation to the tumor from many different angles. Several machines (with names such as X-Knife, CyberKnife, and Clinac) do stereotactic radiosurgery this way.

**Possible side effects of radiation therapy**

The main concern with radiation therapy is damage to parts of the eye, leading to problems such as cataracts, retinal detachment, glaucoma (increased pressure inside the eye), or bleeding into the eye. These can result in partial or complete loss of vision or other problems, which might not happen right away. The risk depends on the size and location of the tumor.

Because the radiation is focused only on the affected eye, it is not likely to affect vision in the other eye or to cause other side effects sometimes linked with radiation therapy, such as hair loss or nausea.

For lymphomas, radiation therapy is sometimes directed at the brain and spinal cord. This can sometimes cause side effects such as problems with thinking, learning, and memory, which might get worse over time.

To learn more about radiation therapy, see the Radiation Therapy section of our website or [Understanding Radiation Therapy: A Guide for Patients and Families](https://www.cancer.org/content/cancer/en/cancer/eye-cancer/references.html).

**References**

See all references for Eye Cancer ([https://www.cancer.org/content/cancer/en/cancer/eye-cancer/references.html](https://www.cancer.org/content/cancer/en/cancer/eye-cancer/references.html))

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Laser Therapy for Eye Cancer

Lasers are highly focused beams of light that can be used to destroy body tissues. Laser therapy is sometimes used to treat intraocular (eye) melanoma, but it is not used to treat intraocular lymphoma.

**Transpupillary thermotherapy (TTT)**

This is the most common type of laser treatment for eye melanoma. It uses infrared light to heat and kill the tumor. It works well for small choroidal melanomas because the melanin pigment in these cells absorbs the light energy from the laser.

TTT is only used to treat small choroidal melanomas because the laser might not be able to reach the deeper parts of thicker melanomas. TTT is not usually the main treatment, but it may be used as an adjuvant (additional) treatment after brachytherapy (plaque radiotherapy\(^1\)). Usually 1 to 3 treatments are given to kill the tumor.

**Laser photocoagulation**

This treatment uses a highly focused, high-energy light beam to burn tissue. This type of treatment was first tried in the 1950s, but it is rarely used now to treat eye melanoma. It can be effective for very small melanomas, but it is more often used to treat side effects from radiation. Several laser treatments are usually given 6 or 8 weeks apart to treat a tumor.

**Possible side effects of laser therapy**

As with radiation therapy, the main concern with laser therapy is damage to parts of the eye that could result in loss of vision. The risk depends on the size and location of the tumor.

**References**

See all references for Eye Cancer ([https://www.cancer.org/content/cancer/en/cancer/eye-cancer/references.html](https://www.cancer.org/content/cancer/en/cancer/eye-cancer/references.html))

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Chemotherapy for Eye Cancer

Chemotherapy (chemo) is the use of drugs to treat cancer. The drugs can be injected into a certain part of the body (such as the eye), or they can be injected into a vein or taken by mouth to reach throughout the body, making this treatment very useful for cancers that have spread. Chemo can be useful for treating intraocular (eye) lymphoma, but it is used less often for intraocular melanoma.

Chemotherapy for lymphoma of the eye

Depending on the type and the stage of the lymphoma, chemo may be used alone or in combination with radiation therapy. There are several ways chemo can be given:

- **Intraocular:** Some chemo drugs can be injected directly into the eye. This concentrates the chemo at the site of the cancer, allowing higher doses to be given without causing severe side effects in other parts of the body.

- **Intrathecal:** If the lymphoma might have spread to the brain or spinal cord, chemo can be given directly into the cerebrospinal fluid (the fluid surrounding the brain and spinal cord). Often, this is done during a lumbar puncture (spinal tap). Another option is to place a special type of catheter (an Ommaya reservoir) into the fluid through a small hole in the skull. The end of the catheter, which has a dome-shaped reservoir, stays just under the scalp. Doctors and nurses can use a thin needle to give chemo drugs through the reservoir.

- **Systemic:** Chemo drugs can be injected into a vein (usually in the arm) or taken as pills, after which they will reach all areas of the body. This route is especially useful if the cancer might have spread to other parts of the body.

Methotrexate is a chemo drug often used to treat lymphoma of the eye. It can be given directly into the eye, intrathecally, or systemically. It is often given in combination with other drugs to treat lymphoma. Many other chemo drugs can be used as well.

Doctors give chemo in cycles, with each period of treatment followed by a rest period to give the body time to recover. Chemo cycles generally last about 3 to 4 weeks. Most chemo treatments are given on an outpatient basis (in the doctor’s office or hospital outpatient department), but some require a hospital stay. Sometimes a patient may get one chemo combination for several cycles and later switch to a different one if the first combination does not seem to be working well.

**High-dose chemo followed by stem cell transplant:** Doctors are limited in the doses
of chemo they can give because of the side effects these drugs can cause. High doses of chemo can especially damage the bone marrow (where new blood cells are made), which can be life-threatening.

If standard doses of chemo are no longer working, doctors sometimes give high doses of chemo that they know will likely destroy the bone marrow. Before giving the chemo, they take blood-forming stem cells from the patient’s body. After the chemo has been given, they infuse the stem cells back into the body. These cells settle in the bone marrow, where they make new blood cells.

This technique can be useful in some situations, but it can be hard for the patient to go through and can cause serious side effects. For more detailed information on stem cell transplants, see Non-Hodgkin Lymphoma and Stem Cell Transplant (Peripheral Blood, Bone Marrow, and Cord Blood Transplants).

Chemotherapy for melanoma of the eye

Melanoma usually does not respond well to standard chemo drugs. Chemo is used only when the cancer has become widespread. If chemo is used, the treatment is generally the same as for melanoma of the skin. For more information, see Melanoma Skin Cancer.

Newer targeted drugs, which work in different ways from chemo drugs, have shown some promise in treating skin melanomas in recent years, and are now being studied for use against eye melanomas.

Possible side effects of chemo

Chemo drugs attack cells that are dividing quickly, which is why they work against cancer cells. But other cells in the body such as those in the bone marrow (where new blood cells are made), the lining of the mouth and intestines, and the hair follicles, also divide quickly. These cells are likely to be affected by chemo, which can lead to side effects.

The side effects of chemo depend on the type and dose of drugs given, how they are given, and the length of time they are taken. The side effects of systemic chemo can include:

- Hair loss
- Mouth sores
- Loss of appetite
Nausea and vomiting
Diarrhea or constipation
Increased chance of infections (from having too few white blood cells)
Easy bruising or bleeding (from having too few blood platelets)
Fatigue (from having too few red blood cells)

These side effects usually go away after treatment is finished. There are often ways to lessen these side effects. For example, there are drugs to help prevent or reduce nausea and vomiting. Some drugs may also have specific side effects not listed above. Be sure to ask your doctor or nurse about medicines to help reduce side effects, and let him or her know when you do have side effects so they can be managed.

For more information on chemotherapy, see the Chemotherapy section on our website.

References
See all references for Eye Cancer
(https://www.cancer.org/content/cancer/en/cancer/eye-cancer/references.html)

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Targeted Drugs and Immune Therapy for Eye Cancer

Medicines for eye melanoma

Melanoma that has spread outside of the eye can be hard to treat, and unfortunately standard chemotherapy drugs often are not very helpful.

In recent years, researchers have developed newer types of drugs to treat advanced melanomas. Several of these drugs are now used to treat melanomas of the skin, but it’s not yet clear if they will be as helpful in treating uveal (eye) melanomas. These newer drugs generally fall into 2 groups.
Immunotherapy drugs: These drugs work by helping the body’s own immune system recognize and attack cancer cells. Drugs such as pembrolizumab (Keytruda®) and ipilimumab (Yervoy®) have been shown to help some people with melanoma of the skin. These and some other immunotherapy drugs are now being studied for eye melanomas as well.

Targeted drugs: Some newer drugs target parts of melanoma cells that make them different from normal cells. For example, about half of all skin melanomas have a change (mutation) in a gene called BRAF, and several drugs that target this gene change are now available to treat these cancers. Unfortunately, this mutation is much less common in uveal melanomas, but in people who have it, these drugs might be helpful. Drugs targeting other gene changes are now being studied as well.

For more information on some of these newer drugs, see “What’s new in eye cancer research and treatment?”

Monoclonal antibodies for eye lymphoma

Antibodies are proteins normally made by the immune system to help fight infections. Man-made versions, called monoclonal antibodies, can be designed to attack a specific target, such as a substance on the surface of lymphocytes (the cells in which lymphomas start).

Several monoclonal antibodies are now being used to treat lymphoma. In some cases they may be used to help treat lymphoma of the eye.

Rituximab (Rituxan®) is an antibody that attaches to a substance called CD20 that is found on the surface of many lymphoma cells. This attachment seems to make the lymphoma cell die. Rituximab may be given by intravenous (IV) infusion or injected directly into the eye. The treatments can be given in the doctor’s office or clinic. Common side effects are usually mild but may include chills, fever, nausea, rashes, fatigue, and headaches. Even if these symptoms occur during the first rituximab infusion, it is very unusual for them to recur with later doses. Rituximab is often combined with chemotherapy.

The monoclonal antibody ibritumomab tiuxetan (Zevalin®) is similar to rituximab but has a radioactive molecule attached to it, which may help it work better. Because of the radiation, this drug is somewhat harder for doctors to give than rituximab. Another limitation is that it can’t be used along with chemo because it also lowers blood counts. At this time it is generally used if chemo and/or rituximab are no longer working.
Location and Size

The main factors in determining treatment for eye melanoma include the location and size of the cancer, as well as the likelihood of saving vision in the eye. There is not much advantage in saving an eye if a small melanoma in a crucial place has already destroyed vision in the eye. On the other hand, doctors will not necessarily want to remove an eye that functions normally even if the tumor is large. Therefore, the statements below about treatment may not apply to every situation.

It’s important to keep in mind that both outcomes and quality of life tend to be similar over time in people who have had enucleation\(^1\) (removal of the eyeball) and those who have had radiation therapy\(^2\). Radiation therapy is more likely to preserve some vision in the eye, especially during the first few years after treatment, but studies have found that people who have had radiation therapy are also more likely to be more anxious about the chance of the cancer coming back. Be sure to talk with your doctor before treatment about what factors are most important to you.

**Choroidal melanomas**

Treating melanomas that start in the choroid depends on the size of the tumor and how well the eye functions. The smaller the tumor, the less likely surgery will be needed, unless the eye is badly damaged or vision is lost.

**Small melanomas:** There are often several options for treating small choroidal melanomas. Both you and your doctor should decide which option is best for you.

- Careful observation (also known as *watchful waiting*). Not all of these melanomas grow quickly and need to be treated right away. And sometimes, it’s very hard for the doctor to even be sure if a spot on the choroid is truly a melanoma. If the tumor is very small, watching it closely and treating it only if it starts to grow is often a reasonable option.
- **Radiation therapy**\(^3\), such as brachytherapy (episcleral plaque therapy), proton beam therapy, or stereotactic radiation therapy
- **Laser therapy**\(^4\), including transpupillary thermotherapy (TTT), most often along with brachytherapy
- **Surgery**\(^5\), which may require removing only the tumor or might need to be as extensive as enucleation (removing the entire eye). This might be necessary if the eye is severely damaged by the tumor (for example, causing severe glaucoma).
Medium-sized melanomas: These tumors can usually be treated by many of the same approaches used for small melanomas:

- Radiation therapy\(^6\), such as brachytherapy (episcleral plaque therapy), proton beam therapy, or stereotactic radiation therapy
- Laser therapy\(^7\), including transpupillary thermotherapy (TTT) or laser coagulation, along with brachytherapy
- Surgery\(^8\), which may require removing only the tumor or might need to be as extensive as enucleation (removing the entire eye). This might be necessary if the eye is severely damaged by the tumor (for example, causing severe glaucoma).

Once again, the choice of treatment is a decision that should be made by both you and your doctor. Radiation and surgery appear to be about equally effective. Radiation offers the best chance of preserving vision in the eye, but some people who have radiation may eventually need surgery.

Large melanomas: The standard treatment for these cancers is usually surgery\(^9\), which often needs to be more extensive than for smaller melanomas. Enucleation (removal of the entire eye) is the preferred surgery. In rare cases where the cancer has grown extensively outside of the eye, the doctor might recommend removing other structures in the eye socket, such as muscles or part of the eyelid, as well.

Some doctors have begun treating large melanomas with plaque radiation therapy\(^10\) with fairly good results. The cure rate appears to be about as high as with surgery, but it is important to have a doctor experienced with this procedure for large melanomas. This allows people to avoid the cosmetic effect of losing their eye, but most people still end up with poor vision in the eye. Other options that may be considered include proton beam radiation and stereotactic radiosurgery.

Iris melanomas

Melanomas of the iris (the colored part of the eye) are usually small, slow-growing tumors. One option for people with an early stage iris melanoma is to watch it closely to see if it grows. A series of special photographs are taken to help monitor the tumor. If it begins to grow, treatment may be surgery\(^11\) or radiation therapy\(^12\) (in certain situations).

If surgery is recommended, the amount of eye tissue to be removed depends on the extent of the cancer. Types of surgery for early iris melanomas include:

- Iridectomy (removal of part of the iris)
Iridotrabeculectomy (removal of part of the iris, plus a small piece of the outer part of the eyeball)

- Iridocyclectomy (removal of a portion of the iris and the ciliary body)
- Enucleation (removal of the eyeball)

**Ciliary body melanomas**

These rare cancers can be treated with either surgical removal\(^\text{13}\) of the tumor, if it is small enough, or radiation therapy\(^\text{14}\). In more advanced cases or if there is serious eye damage, enucleation (removal of the eyeball) may be needed.

**Advanced and recurrent melanomas**

Most uveal melanomas are still only within the eye when they are first diagnosed. It is rare for the cancer to have already spread outside of the eye. But unfortunately, in about half of all patients the melanoma will come back at some point after treatment.

Cancer that comes back after treatment is called *recurrent*. Recurrence can be local (in or near the same place it started) or distant (spread to organs such as the lungs or liver). Treating melanomas that come back depends on many factors, including where the cancer recurs and what type of treatment was used initially.

Cancers that recur within the eye (intraocular recurrence) are usually treated by enucleation\(^\text{15}\) (removal of the eyeball).

When melanoma recurs outside the eye (called *extraocular recurrence*), it most often comes back in the liver. It might also come back in other areas, like the lungs or bones. These cancers are often hard to treat.

If the cancer is only in the liver, different types of treatments might help keep the cancer under control or help relieve symptoms. These include surgery (if there is only one or a few tumors), radiation therapy, destroying (ablating) tumors by heating or freezing them, or injecting drugs or other substances into the liver to try to kill the tumors or cut off their blood supply. Tumor ablation and radiation might also be used for tumors that have spread to other parts of the body, such as the lungs.

Systemic (whole-body) treatments such as chemotherapy\(^\text{16}\), immunotherapy, and targeted therapy\(^\text{17}\) drugs have not yet been proven to be very helpful in treating eye melanomas that have spread, but they might help keep the cancer in check for a time in some people. Because current treatments for advanced eye melanomas are limited,
clinical trials\textsuperscript{18} of newer treatments might be a good option. (See “What’s new in eye cancer research and treatment?”\textsuperscript{19} for some examples of newer treatments now being studied.)

References

See all references for Eye Cancer (https://www.cancer.org/content/cancer/en/cancer/eye-cancer/references.html)

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Treating Intraocular (Eye) Lymphoma

These lymphomas are often linked with lymphomas of the brain, which are known as primary central nervous system (CNS) lymphomas. Because lymphomas of the eye often spread to the brain or have already spread when the cancer is first diagnosed, in many cases both the eye and the brain are treated. For more detailed information on the treatment of CNS lymphomas, see Non-Hodgkin Lymphoma\textsuperscript{1}.

Because these cancers are rare, they have been hard to study. A number of approaches can be used, but the best course of treatment is not known, so it is very important to go to a doctor experienced in treating eye lymphoma.

Surgery is not used to treat eye lymphomas because it is likely that the disease has already spread beyond the eye by the time it is found. Most often, doctors treat these cancers with external radiation therapy\textsuperscript{2}, chemotherapy\textsuperscript{3} (chemo), or a combination of the two.

The radiation therapy may be given only to the eye, or it may also include the brain and spinal cord. Radiation to both eyes may also be recommended, because often the lymphoma is in both eyes. Radiation therapy to the brain and spinal cord can help prevent the lymphoma from spreading there (or help destroy cancer cells that may already be there but haven’t been detected). But it can also cause side effects, leading to problems with thinking, concentration, and memory.
Chemo can be given into a vein (systemic chemo) or directly into the cerebrospinal fluid (intrathecal chemo). It can also be given directly into the eye (intraocular chemo), which gets higher doses of the drug to the tumor. Methotrexate is usually the main chemo drug used. Monoclonal antibodies such as rituximab may also be given directly into the eye. The best combination and dosage of drugs is not yet known, and the choice may be influenced by the exact cell type (classification) of lymphoma. Because recurrence rates are high if chemo is given only systemically (into a vein), therapy is usually given directly to the eye with either radiation or intraocular chemo as well.

If the lymphoma does not respond to treatment or if it comes back (recurs), high-dose chemotherapy followed by a stem cell transplant may be an option for some people.

References

See all references for Eye Cancer (https://www.cancer.org/content/cancer/en/cancer/eye-cancer/references.html)

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