Treating Thymus Cancer

This information represents the views of the doctors and nurses serving on the American Cancer Society’s Cancer Information Database Editorial Board. These views are based on their interpretation of studies published in medical journals, as well as their own professional experience.

The treatment information in this document is not official policy of the 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.

Making treatment decisions

After a thymic tumor is found and tests have been done to get a sense of its likely stage, your cancer care team will discuss your treatment options with you. Factors important in choosing a treatment include the type and stage of the cancer, whether or not it is resectable (able to be completely removed with surgery), and whether you have any other serious medical problems. Because thymic cancer is rare, it has been hard to do large studies looking at treatments and comparing one against another. That’s why in many cases the best way to treat this cancer is not always clear.

Your health care team may include: a thoracic surgeon, radiation oncologist, medical oncologist, pulmonologist, a neurologist, as well as nurse practitioners, nurses, psychologists, social workers, rehabilitation specialists, and other health professionals.

Selecting a treatment plan is an important decision, and you should take the time to think about all of your choices. If time permits, it is often a good idea to seek a second opinion. A second opinion can provide more information and help you feel more confident about the treatment plan chosen.
The main treatments for thymus cancer are:

- Surgery
- Radiation
- Chemotherapy

For information about some of the most common approaches used based on the extent of the disease, see Treatment of Thymus Cancers by Extent and Type of Tumor.

**Surgery for Thymus Cancer**

Whenever possible, surgery is used to treat thymus cancers. If you have thymus cancer, one of the first things your doctor will do is to try to determine whether or not the cancer is completely resectable (removable) with surgery.

The most common surgery for thymus tumors is complete removal of the thymus (including any tumor). This is called a thymectomy. In most cases the surgery is done through a median sternotomy, an incision down the middle of the chest that splits the sternum (breast bone), permitting thorough removal of the thymus and tumor.

The surgeon will also try to remove any areas of tumor spread outside of the thymus. That means that if the tumor has grown into nearby structures, the surgeon may also need to remove parts of those structures, as well. This could mean removing parts of the pleura (tissue coating the lung), pericardium (the sac containing the heart), nerves, the superior vena cava (a large vein leading to the heart), and/or lung.

Some doctors might suggest surgery even if the tumor is not completely resectable, as is the case with many stage III thymomas and with most stage IV thymomas. In these cases, the doctor might remove as much tumor as possible (called debulking), and then recommend further treatment with radiation therapy and/or chemotherapy. But not all doctors agree that surgery that doesn’t remove all of the cancer helps people live longer. In some cases, chemotherapy or radiation therapy may be given before surgery to try to shrink the tumor so that it can be more easily removed completely.

**Possible side effects of surgery for thymus cancer**

Possible complications depend on the extent of the surgery and your health beforehand. Serious complications can include excessive bleeding, wound infections, and pneumonia.

You will need to stay in the hospital for several days after the surgery. Because the
surgeon usually will have to open your chest for the operation, the incision will hurt for some time after surgery. Your activity will be limited for at least a month or two.

Some people may need to have part or all of a lung removed. If your lungs are in good condition (other than the presence of the cancer) you can usually return to normal activities after a lobe or even an entire lung has been removed. If you already have lung problems such as emphysema or chronic bronchitis (which are common among heavy smokers), you may become short of breath with activities after surgery.

For more general information about surgery, see Cancer Surgery.

- References
  See all references for Thymus Cancer

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Radiation Therapy for Thymus Cancer

Radiation therapy is the use of high-energy radiation in the form of x-rays or radioactive particles to kill cancer cells.

Radiation therapy can be used in several situations. After surgery, radiation therapy is sometimes given to try to kill any small deposits of cancer that may have been left behind because they were too small to see. This, called adjuvant therapy, is done for nearly all stage III and IV thymomas and for most thymic carcinomas, even when no visible tumor was left behind.

Radiation may also be used after surgery if the doctor thinks that some cancer was left behind.

Some doctors may use radiation therapy to try to shrink larger tumors before surgery, especially if the tumor isn’t completely resectable. But not all doctors agree this is useful. Some patients who can’t have surgery are treated with radiation therapy alone, although this is not as effective as surgery. Sometimes chemotherapy is given with radiation to help it work better.
In people with advanced disease, radiation therapy can be used to help ease (palliate) symptoms from the cancer such as shortness of breath, pain, bleeding, or trouble swallowing.

The type of radiation therapy used most often to treat thymic cancer is **external beam radiation therapy (EBRT)**. This type of radiation therapy uses x-rays from a machine outside the patient’s body to kill cancer cells. The treatment is much like getting an x-ray, but the radiation is more intense. The procedure itself is painless, but it does cause side effects (discussed later on). Before your treatments start, the medical team will take careful measurements to determine the correct angles for aiming the radiation beams and the proper dose of radiation. They may also do special CT scans to help plan your treatments. Each treatment lasts only a few minutes, although the setup time — getting you into place for treatment — usually takes longer. Most often, radiation treatments are given 5 days a week for several weeks.

A type of EBRT called **three-dimensional conformal radiation therapy** (3D-CRT) is often used to treat thymic cancers. This technique allows doctors to more accurately target the tumor while reducing the radiation exposure to nearby healthy tissues such as the lungs and the heart. This might offer a better chance of increasing the success rate and reducing side effects.

Sometimes, an advanced form of 3D-CRT, called **intensity-modulated radiation therapy** (IMRT) is used. It uses a computer-driven machine that moves around the patient as it delivers radiation. Along with shaping the radiation beams and aiming them at the tumor from several angles, the intensity (strength) of the beams can be adjusted to minimize the dose reaching the most sensitive normal tissues. Most major hospitals and cancer centers are now able to provide IMRT.

### Possible side effects of radiation therapy for thymus cancer

Common side effects of radiation therapy include:

- Fatigue
- Skin changes where the radiation passes through, such as redness and blistering
- Nausea, and vomiting
- Irritation of the esophagus (the tube between the mouth and stomach), which could cause problems such as painful swallowing
- Poor appetite and weight loss
- Diarrhea (if the abdomen/belly or pelvis is treated).

Radiation can damage bone marrow leading to low blood counts. This can lead to anemia (low red blood cell counts) which can cause people to feel weak and tired. It can
also lead to low white blood cell counts, which increases the risk of serious infections.

Chest radiation therapy can also damage lungs. This can lead to trouble breathing and shortness of breath. Although this usually gets better after radiation treatments stop, sometimes the damage is long-term (or even permanent).

Most side effects are temporary and improve after radiation treatment is done.

If radiation therapy is used together with chemotherapy, the side effects are often worse.

If you are having any side effects from radiation therapy, tell your doctor or nurse. In most cases there are ways to help control these symptoms.

For more general information about radiation therapy, see A Guide to Radiation Therapy.

- References
See all references for Thymus Cancer

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Chemotherapy for Thymus Cancer

Chemotherapy (chemo) uses anti-cancer drugs that are given intravenously (into a vein) or by mouth. These drugs enter the bloodstream and reach throughout the body, making this treatment especially useful for cancer that may have spread to organs beyond the thymus.

Chemo may be used in several situations:

- It may be given after surgery to try to kill any cancer cells that may have been left behind because they were too small to see. This is called as adjuvant treatment.
- It may be given before surgery to try to shrink tumors that are not otherwise resectable (able to be removed completely). This is known as neoadjuvant therapy.
• In people who have advanced cancer or are not healthy enough for surgery, chemo may be the main treatment.
• Chemo is sometimes combined with radiation to help it work better. This is known as chemoradiation or chemoradiotherapy.

Doctors give chemo in cycles, with each period of treatment followed by a rest period to allow the body time to recover. Chemo cycles generally last about 3 to 4 weeks, and initial treatment typically involves 4 to 6 cycles. Chemo is often not recommended for patients in poor health, but advanced age by itself is not a barrier to getting chemo.

Several chemo drugs may be used in the treatment of thymomas and thymic carcinomas, including:

• Doxorubicin (Adriamycin®)
• Epirubicin (Ellence®)
• Cisplatin
• Carboplatin
• Cyclophosphamide (Cytoxan®)
• Ifosfamide (Ifex®)
• Vincristine (Oncovin®)
• Etoposide (VP-16)
• Paclitaxel (Taxol®)
• Pemetrexed (Alimta®)
• 5-fluorouracil (5-FU)
• Gemcitabine (Gemzar®)

The corticosteroid drug prednisone is often given with chemo.

These drugs are usually given in combination to try to increase their effectiveness. For example, the combination of cisplatin, doxorubicin, and cyclophosphamide (called PAC) with or without prednisone is often used to treat thymoma. The combination of carboplatin and paclitaxel may be used to treat thymic carcinoma

**Possible side effects of chemotherapy for thymus cancer**

Chemo drugs work by attacking 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, the lining of the mouth and intestines, and the hair follicles, also divide quickly. These cells are also likely to be affected by chemo, which can lead to certain side effects.

The side effects of chemo depend on the type and dose of drugs you are given and how
long they are used. These side effects can include:

- Hair loss
- Mouth sores
- Loss of appetite
- Nausea and vomiting
- Fatigue and weakness

Chemo can also affect the blood forming cells of the bone marrow, leading to:

- Increased chance of infections (due to low white blood cell counts)
- Easy bruising or bleeding (due to low blood platelet counts)
- Fatigue and weakness (due to low red blood cell counts)

These side effects usually go away after treatment ends and there are often ways to lessen them. For example, drugs can be given to help prevent or reduce nausea and vomiting. If you do have side effects, be sure to ask your doctor or nurse about medicines to help reduce or manage them effectively.

Some drugs can have other side effects. For example, cisplatin and paclitaxel can damage nerves (called neuropathy). This can sometimes lead to pain, burning or tingling sensations, sensitivity to cold or heat, or weakness in the hands and feet. Cisplatin can also affect the nerves of the ear, leading to hearing loss. In most cases these problems improve or even go away once treatment is stopped, but they may last a long time in some people. You should report this, as well as any other side effects or changes you notice while getting chemotherapy, to your medical team so that you can get prompt treatment for them. In some cases, the doses of the chemotherapy drugs may need to be reduced or treatment may need to be delayed or stopped to prevent the effects from getting worse.

**Octreotide**

A drug called octreotide (Sandostatin® and Sandostatin LAR®) may also help some people with advanced thymoma. This is not a typical chemo drug. It is a man-made version of a hormone called somatostatin. The drug is effective in some cases because somatostatin attaches to the thymoma cells and causes them to stop growing or die. Side effects of this drug can include pain or burning at the injection site, stomach cramps, nausea, vomiting, headaches, dizziness, and fatigue. It is also linked to increased risk of gallstones.

For more general information about chemotherapy, see [Chemotherapy](#).
Treatment of Thymus Cancers by Extent and Type of Tumor

Whether or not a thymus cancer is considered resectable (removable by surgery) is one of the most important factors in determining treatment options. The type of tumor is also important. Thymic carcinomas are more likely to grow and spread quickly than thymomas and often require more aggressive treatment.

Resectable cancers

For patients with resectable cancers (almost all stage I and II thymus cancers, most stage III cancers, and small number of stage IV cancers), surgery offers the best chance for long-term survival if it can be tolerated. This typically includes removal of the entire thymus and, depending on the extent of the disease, maybe parts of nearby organs or blood vessels as well.

Early stage thymomas (such as stage I and II) do not usually require further treatment after surgery as long as the tumor was removed completely. For early thymomas, radiation therapy may be considered if there is concern that any tumor was left behind.

Patients with more advanced stage thymomas (such as stages III and IV) may be treated with radiation after surgery, even if all of the tumor was removed. If the tumor couldn’t be removed completely, radiation therapy is usually given after surgery. Depending on how much cancer was left behind, chemotherapy (chemo) may be added as well.

Thymic carcinomas are more likely to come back after treatment. Patients with stage I tumors may not need further treatment if the tumor was removed completely. If the tumor is more advanced, or some might have been left behind, patients are typically
treated with radiation after surgery. The radiation may be given with chemo as well, especially if some of the cancer is left behind after surgery.

**Unresectable cancers**

Unresectable cancers are those that cannot be removed with surgery. This group includes cancers that are too close to vital structures or that have spread too far to be removed completely (which includes many stage III and most stage IV cancers), as well as cancers in people who are too ill for surgery.

In some cases, doctors may advise giving chemo, radiation therapy, or both first to try to make the tumor resectable. If it shrinks enough, surgery is done. This is then followed by further treatment with chemo or radiation therapy.

Surgery may be the first treatment for some unresectable cancers, to try to remove as much of the tumor as possible. This is known as *debulking*. Radiation therapy and/or chemo are then given. The hope is that the surgery may help the other treatments work better and may help people live longer, even if it doesn’t cure the cancer. Studies of this approach have had mixed results.

For patients who can’t have surgery, either because the cancer has spread too far or because they are too sick from other serious medical conditions, chemo and radiation therapy are the main treatment options.

Because unresectable cancers can be hard to treat, taking part in a clinical trial of a newer form of treatment may be a reasonable option.

**Recurrent thymus cancer**

When cancer comes back after treatment it is called *recurrent*. Recurrence can be local (in or near the same place it started) or distant (spread to organs such as the liver or bone).

Thymomas most often come back locally. Thymic carcinomas can also come back locally and in nearby lymph nodes, but they may also spread to liver, lungs, and bone.

Treatment for thymus cancer that has recurred (come back) after initial treatment depends on the location of the recurrence and on what the original treatment was. If the recurrence is not too widespread, surgery may be an option and would offer the best chance for long-term survival. But in most cases, the treatment options may be limited to radiation therapy and/or chemo. These treatments can often be effective in controlling
the cancer for a time, although they are very unlikely to result in a cure.

Because recurrent cancers can often be hard to treat, clinical trials of new types of treatment may be a good option.

- References

See all references for Thymus Cancer

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