

RADIATION THERAPY FOR BONE METASTASES

WHAT ARE BONE METASTASES?

- Cancer that starts in one part of the body can sometimes spread and invade other organs. If a tumor spreads to the bone, this process is called a bone metastasis.
- When bone metastases occur, they are sometimes called “bone cancer”. However, in most cases, bone metastases are the spread of the original cancer through the blood stream or lymph vessels to the bone. So instead of having both bone cancer and breast cancer, for example, a person has breast cancer that has spread to the bone. True bone cancers, where the cancer starts in the bone itself, can occur but are very rare.
- Cancers that often spread to the bone include breast, kidney, lung, multiple myeloma, prostate and thyroid cancers.
- Cancer treatments have improved in recent years, allowing many patients to live longer with cancer than ever before. Unfortunately, bone metastases still occur in many patients sometimes months or even years after an original cancer treatment. There are many treatment options available for patients with bone metastases.

SYMPTOMS AND SIGNS OF BONE METASTASES

- Healthy bone provides structural support, regulates mineral balance and blood cell production in your body. When cancer involves the bone, some or all of these normal bone functions may be affected.
- Pain is the most common symptom of bone metastases. Pain from bone metastases can sometimes be worse at night or with bed rest.

- Bone metastases can weaken bones, putting them at risk for breaking. In some cases, a fracture is the first sign of bone metastases. The long bones of the arms and legs and the bones in the spine are the most common ones to break.
- When cancer spreads to the spine, it can squeeze the spinal cord causing a spinal cord compression. Signs of this are back pain, numbness or weakness in the legs, trouble urinating or having a bowel movement, or numbness in the abdomen.
- Bone metastases can cause calcium to be released from the bones into the bloodstream. The increased calcium can cause loss of appetite, nausea, thirst, constipation, tiredness or confusion. If you notice these symptoms, you should talk to your doctor right away.
- Sometimes you have no noticeable symptoms or signs that the cancer has spread to the bone. Rather, you may come in for a routine follow-up visit and the cancer is found during your exam or on imaging scans.

TREATING BONE METASTASES

- The goal of treatment for bone metastases is to control pain or other symptoms and improve your quality of life. In some cases, these treatments can also help you live longer with your cancer.
- Your doctor may prescribe medicines called bisphosphonates. These drugs slow the bone loss caused by cancer to reduce the risk of bone fracture and pain.



- Your doctor may also prescribe chemotherapy. These are drugs that kill cancer cells.
- Your natural hormones can sometimes encourage cancer cells to grow. For example, in women, the hormone estrogen can help some breast cancers grow. Your doctor may prescribe hormone therapy to reduce your hormone levels and try to stop the bone tumor from growing.
- Radiation therapy uses high-energy X-rays to injure and destroy cancer cells.
- After finishing radiation treatment, it may take one or more weeks before the radiation is able to shrink the tumor to stop the pain.
- In selected circumstances, your doctor will place a radioactive substance into your bloodstream. This is called a radiopharmaceutical and it works to attack cancer cells in all bones.
- If the cancer is likely to break a bone or the tumor causes pressure on your spinal cord, sometimes your doctor will recommend surgery before radiation with the goal of providing more relief from symptoms and preserving normal function.
- In most cases, treatment for bone metastases will not “cure” your cancer. However, modern treatments allow doctors to control the bone metastases, allowing many patients to improve quality of life and to live months or years longer. For you, this time will depend on where the original cancer started, where else it has spread and how well it responds to treatments rather than on the actual number of bone metastases.

WHAT TYPES OF SPECIALISTS WILL I SEE?

- Treatment for bone metastases depends on several factors, including where the cancer started, its extent (stage), its location and your overall health.

- A radiation oncologist is a doctor specially trained to treat cancer with types of radiation.
- A medical oncologist is a doctor who specializes in treating cancer with drugs called chemotherapy.
- A surgeon is a doctor who specializes in surgically removing cancers.
- Sometimes, your cancer may be treated by using only one type of treatment. In other cases, your cancer may be best treated using a combination of treatment types.

WHAT IS RADIATION THERAPY?

- Radiation therapy is the use of various types of radiation to safely and effectively treat cancer and other diseases.
- Doctors called radiation oncologists use radiation therapy to kill tumors, to control tumor growth and to relieve symptoms.
- Radiation therapy works by damaging the genetic material or other critical components of cancer cells. This limits their ability to reproduce. Radiation can sometimes stop the blood supply to cancers, which also kills the cancer cells. When these cancer cells die, the body naturally eliminates them.
- After the radiation treatment ends, your body is still at work getting rid of the cells damaged by radiation. This is why it often takes a few weeks for you to have the full benefit of the treatment.
- Normal cells are also affected by radiation, but they are better able to repair the damage caused by radiation therapy than can most cancer cells.



- Treatments are noninvasive and painless, much like receiving an X-ray. You should be able to go home after treatment and will not need to stay in the clinic.
- Understanding external beam radiation therapy for bone metastases
- External beam radiation therapy involves a series of outpatient treatments to accurately deliver radiation therapy to the bones. The radiation will only be directed to the bone area where the tumor was found.
- Treatments are usually given every day, Monday through Friday, for about one to three weeks. Each treatment itself only takes a few minutes. Sometimes treatments are delivered in a single, large dose such that treatment is completed in one day. In selected situations, retreatment can be considered with stereotactic techniques.
- Before starting radiation, you will undergo a radiation “planning” session where the radiation treatment team creates a way to set your treatments up accurately on a day-to-day basis. Sometimes, devices to keep you in position are used to help with accuracy of daily set up.
- You then undergo imaging in the treatment position, typically with a CT scan or fluoroscopy. The radiation oncologist then works with his or her treatment team to “prescribe” the radiation treatment.
- Tailoring each of the radiation beams allows doctors to target more of the cancer cells while sparing nearby organs.

POSSIBLE SIDE EFFECTS

- Fatigue is the most common side effect you may notice, often described as an overall “blah” feeling. Feeling tired often starts in the middle of the treatment and may last for weeks after your last radiation session.
- It is normal for you to lose the hair on your body where the radiation beams were aimed. The hair will probably grow back, but it may feel a little different that it did before treatment. However, you will not lose the hair on your head unless your skull is the bone being treated.
- You may also notice some minor skin changes or tingly feeling where the radiation was aimed. This should fade over time.
- Side effects are different for everyone, and depend to some degree on which part of your body is being treated. Your radiation oncologist and nurse will follow you closely during treatment and ask you and your family members about any symptoms. Medications may be prescribed to make you more comfortable.
- Please do not delay in talking to a radiation oncologist or oncology nurse about any side effects or concerns about treatments. They want to help you and your caregivers feel as comfortable as possible.

PATIENT CARE DURING TREATMENT

- You should try to get as much rest as possible.
- Coping with cancer may be easier with good support from family and friends. You may want to consider asking your doctor or nurse about support groups in your area that may also help.
- It is important to follow the doctor’s orders and ask a lot of questions. There are no silly questions; often the treatment team has heard similar questions.
- You and your family should ask the doctor if it’s safe for you to drive.
- It is important to tell your doctor about any medications or vitamins you are taking to make sure they are safe to use during radiation therapy.
- Try to eat a balanced diet. The doctor, nurse or dietician can help suggest foods if you are having trouble eating or if food tastes funny.

The area exposed to radiation must be treated with special care. This includes staying out of the sun, avoiding hot and cold packs, cleaning the area with warm water and mild shampoo (such as baby shampoo), and using lotions and ointments only after checking with your doctor or nurse.



PATIENT CARE DURING TREATMENT

- Often, it is okay to keep up with your normal activities, including moderate exercise. Some patients say they feel better if they exercise regularly. However, you might need to make time to ensure your rest. Ask your doctor what the right level of activity is for you.
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TO LEARN MORE

- ASTRO's patient Web site, www.rtanswers.org, has more information on radiation therapy, including:
 - Questions to ask the radiation oncologist about treatment and safety protocols.
 - Short videos on how to prepare for radiation treatments.
 - Information on clinical trials.
 - Understanding the members of the radiation therapy treatment team.
 - Dictionary of common terms.
 - Contact information for cancer support organizations. These groups offer services ranging from coordinating in person support groups to helping patients with insurance problems.

ABOUT THE RADIATION ONCOLOGY TREATMENT TEAM

Radiation oncologists are the doctors who lead the care of each person undergoing radiation treatment. Other members of the treatment team include radiation therapists, radiation oncology nurses, medical physicists, dosimetrists, social workers and nutritionists.

For information on what each of these professionals does or to locate a radiation oncologist near you, visit www.rtanswers.org.

ABOUT ASTRO

The American Society for Radiation Oncology is the largest radiation oncology society in the world with more than 10,000 members who specialize in treating cancer with radiation therapies. ASTRO is dedicated to improving patient care through education, clinical practice, advancement of science and advocacy.

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