

FEATURE STORY

During Treatment: Side Effects of Therapy

Toxic effects caused by treatment have their own management strategies

Treatment for cancer may include surgery, chemotherapy, hormonal therapy, newer biological therapies, radiation therapy, or any combination of these treatments. Each treatment brings with it side effects that may be mild or severe depending on the dose and individual reactions. In the past, suffering from side effects of treatment was an accepted part of cancer treatment, but today there are many ways to alleviate most side effects.

Nausea and Vomiting

Cancer-related nausea and vomiting can develop at any time during treatment. A chemical known as serotonin is released in response to several types of chemotherapy, and when it binds to certain receptors in the brain, you can become nauseated. Many anti-nausea drugs (antiemetics) work by blocking and shutting down these serotonin receptors.

Aloxi (palonosetron) is designed to prevent short-term as well as prolonged nausea, while others are designed to prevent only the acute nausea that occurs within the first day after therapy. Anzemet (dolasetron), Kytril/Sancuso (granisetron), and Zofran (ondansetron) are given orally, as a skin patch, or intravenously prior to chemotherapy.

Chemotherapy agents can also cause nausea and vomiting by stimulating NK-1 receptors in the brain. Emend (aprepitant), an NK-1 receptor inhibitor, helps prevent acute and delayed nausea and vomiting.

Steroids such as Decadron (dexamethasone) are also commonly used to prevent nausea. Side effects can include jitteriness, but the drugs typically do not cause the effects of long-term steroids, such as swelling and immune suppression.

Hair Loss

Because chemotherapy kills rapidly dividing cells, it can also affect hair follicles, resulting in hair loss. The degree, pattern, and timing of hair loss vary among patients, as do changes that occur during hair regrowth. Drugs such as Adriamycin (doxorubicin) may cause profound hair loss, whereas targeted agents that are aimed directly at cancer cells shouldn't cause any hair loss. Your doctor can tell you what degree of hair loss to expect with treatment.

It's normal to feel distressed about losing your hair, which can begin as soon as two weeks after your first treatment. Your scalp may become sensitive to washing, combing, or brushing during the time when your hair is falling out. Don't be alarmed if hair on your face, such as nasal hair, eyelashes, and eyebrows, also falls out, as well as hair on your arms and legs and pubic area. Strategies to reduce or prevent hair loss caused by cancer drugs are generally ineffective.

If you experience hair loss, do whatever feels comfortable, whether it be wearing scarves, caps, hairpieces, or wigs, or simply leaving your head bare. It may help to crop the hair short prior to hair loss. If you think you might want a wig, buy it before treatment or at the start of treatment so that the wig shop can match your hair color and texture.

Get a prescription from your doctor for the wig because it is often covered by insurance. Your hair should begin to grow back within a few weeks after treatment ends.

Neuropathy

If you are taking cisplatin, Taxol (paclitaxel), Taxotere (docetaxel), Oncovin (vincristine), Velcade (bortezomib), or Navelbine (vinorelbine), you may develop neuropathy, or injury to peripheral nerves. Neuropathy can develop weeks, months, or years after treatment and typically involves the fingers and toes, or possibly the entire hand and foot. Symptoms may gradually resolve as the nerves slowly heal. Some drugs, including Oncovin and cisplatin, can cause permanent neuropathy. Cisplatin can also rarely injure the auditory nerves, causing hearing loss.

Sensory neuropathy, the more common type, may cause pain, numbness, tingling, or loss of sensation because it affects the nerves needed for touch, temperature, and pain. Motor neuropathy results in a disruption of signals to the muscles and can result in symptoms such as muscle weakness, clumsiness, balance problems, and foot drop.

If you develop neuropathy during chemotherapy, it's important to tell your doctor. Neuropathy is often treated with either Neurontin (gabapentin) or antidepressants, because of their effect on certain chemical signals. If your doctor prescribes Neurontin, you will probably be started on a low dose, which will be increased as needed. A compounding pharmacy can prepare a topical cream containing the active ingredient in Neurontin for application to the skin, which can reduce the severity of side effects. Also available topically is a lidocaine patch (Lidoderm), which you can apply to intact skin in the area with the most pain. In some cases, a change in the dose or type of anti-cancer drug may

be necessary.

Pain

Options are available that provide relief to patients who experience cancer-related pain during and/or after treatment. Many cancer centers now have pain specialists and palliative care departments to help you. With your doctor or pain specialist, you can develop a personal pain management plan that may include relief strategies for long-term (chronic) and short-term (acute) pain and brief, severe flare-ups called breakthrough pain.

If you have chronic pain, you need around-the-clock medication to stay in front of the pain—taking drugs to prevent pain rather than waiting to relieve it once it occurs. Long-acting medications continuously given or metabolized slowly in the body are best for chronic pain and can be combined with short-acting medication for acute and breakthrough pain.

Although morphine, one of the most commonly prescribed opioids, has side effects that can include drowsiness, itching, urinary retention, and nausea, it continues to be the standard for chronic pain relief. There are also medications available to relieve symptoms caused by opioids. Constipation is an extremely common side effect of opioids; stool softeners and laxatives should be taken regularly. Be patient with your pain plan. It may take time to reach a balance of pain relief and manageable side effects by gradually adjusting doses or trying different opioids. Many side effects improve once the body adjusts to the medication.

Pain relief patches that can be applied to the skin for continuous release of pain medication over several days may be more convenient than oral medication, especially if you have trouble swallowing. The fentanyl patch, Duragesic, used for chronic pain, delivers opioids continuously through the skin for up to 72 hours. Newer versions of the pain patch include buprenorphine, a potent semisynthetic opioid that has milder side effects than morphine.

If you are worried about becoming addicted or have other concerns about taking pain medication, talk to your doctor or a pain specialist. While the fear of addiction is common, very few patients become addicted to pain medication when it is properly taken for cancer-related pain.

Anemia

If your level of red blood cells (RBCs) drops significantly, you may develop fatigue, shortness of breath, heart palpitations, and disorientation—all symptoms of anemia. RBCs are made from stem cells in the bone marrow and carry oxygen to the body's tissues. Certain cancers, such as leukemia, myeloma, and lymphoma, crowd out or suppress production of healthy RBCs. Chemotherapy and radiation can damage RBCs and the stem cells that make them.

Low levels of RBCs or low hemoglobin levels, a measure of the ability of RBCs to carry oxygen, can be treated with genetically engineered erythropoietin (EPO), a

protein produced normally in the kidneys. The Food and Drug Administration approved Procrit (epoetin alfa) in 1993 for anemia caused by chemotherapy. Procrit is identical to the body's own EPO, which tells the body to create more RBCs. Another drug, Aranesp (darbepoetin alfa), also acts like natural EPO and was approved in 2002. These drugs lower the need for transfusion and may work better when given with iron. However, if your RBCs dip dangerously low, you may still need a blood transfusion.

As of August 2008, the FDA does not recommend these drugs for treating anemic cancer patients who are not receiving chemotherapy or for patients receiving chemotherapy as a curative treatment. Studies have shown they may result in increased harm, particularly blood clots, and decreased survival in certain groups of cancer patients, including those with cancers of the head and neck, breast, lung, and cervix. These drugs carry a "black box" warning, signifying serious side effects. It's now recommended that they only be used with a goal of avoiding transfusions or severe anemia instead of trying to get red blood counts to a normal level.

Neutropenia

You may be prone to infection if you develop neutropenia, a shortage of white blood cells called neutrophils. Fast-growing neutrophils are quickly killed off by chemotherapy drugs and radiation therapy. Fever, fatigue, and body aches may be signs of neutropenia, which can be diagnosed by a routine blood test.

View Illustration: The Role of Neutrophils

The most popular treatment to reduce the magnitude of neutropenia and risk of infection is Neupogen (filgrastim), a drug that stimulates granulocyte colony-stimulating factors, particles in the body that signal white blood cells to grow. Neulasta (pegfilgrastim) is a newer and longer-lasting version of Neupogen. While these drugs can cause bone pain, they also prevent treatment delay or chemotherapy dose reduction.

If you do develop neutropenia, your doctor or nurse may advise you to take special precautions to prevent infection until your white blood cell count improves. Examples of these precautions are frequent hand washing, keeping away from people who have contagious illnesses, and temporary dietary restrictions, such as not eating raw fruits and vegetables. Fever or signs of infection need urgent evaluation in patients receiving chemotherapy.

Fatigue

Cancer-related fatigue, which does not improve with sleep or rest, can be caused by anemia, low thyroid function, or cancer treatments, including radiation, chemotherapy, hormonal therapy, and biological therapy. Although not everyone

may experience fatigue to an intense degree, approximately 90 percent of patients are affected by cancer-related fatigue at some point during treatment. Both how and when fatigue affects an individual can vary, which makes it hard to recognize, describe, and treat this symptom.

Fatigue caused by anemia and low thyroid function can be treated with medication. When those causes are ruled out, a symptom management specialist can look for other approaches to treatment. Fatigue can be amplified if you have pain, are emotionally distressed, or have sleep problems. Poor nutrition and physical inactivity can also cause fatigue. Education and counseling are often part of the treatment and help the patient learn how to save energy and reduce stress.

Exercise, such as walking, has been found to improve cancer-related fatigue. Stimulants like Ritalin (methylphenidate), which is commonly used to treat attention deficit disorder, may also be helpful. Provigil (modafinil) is another stimulant drug that has been used to treat cancer-related fatigue.

Other side effects of cancer treatment are possible, including rash and thrombocytopenia (low platelet counts) which can result in life-threatening bleeding. Talk to your doctor beforehand about all anticipated side effects as well as any side effects you experience during treatment.