Ewing Sarcoma - Childhood - Diagnosis [1]

This section has been reviewed and approved by the Cancer.Net Editorial Board [2], 05/2015

ON THIS PAGE: You will find a list of the common tests, procedures, and scans that doctors can use to find out what?s wrong and identify the cause of the problem. To see other pages, use the menu on the side of your screen.

Doctors use many tests to diagnose Ewing sarcoma and find out if it has spread to another part of the body, called metastasis. Some tests may also determine which treatments may be the most effective. For most types of cancer, a biopsy is the only way to make a definitive diagnosis of cancer. If a biopsy is not possible, the doctor may suggest other tests that will help make a diagnosis. Imaging tests may be used to find out whether the tumor has spread.

This list describes options for diagnosing this type of cancer, and not all tests listed will be used for every person. Your child?s doctor may consider these factors when choosing a diagnostic test:

- Age and medical condition
- Type of tumor suspected
- Signs and symptoms
- Previous test results

In addition to a physical examination, the following tests may be used to diagnose Ewing sarcoma:

- **Blood tests** [3]**.** A complete blood count (CBC) is a blood test that counts the number of each type of blood cell. Abnormal levels of white blood cells, red blood cells, and platelets can be a sign that the tumor has spread. The doctor may also check liver and kidney function and look for high levels of a particular blood enzyme called lactate dehydrogenase or LDH, which sometimes helps signal the presence of a tumor in the body.

Imaging tests

- **X-ray.** An x-ray is way to create a picture of the organs and tissues inside of the body, using a small amount of radiation. Doctors can usually find bone tumors with an x-ray.

- **Bone scan** [4]**.** A bone scan uses a radioactive tracer to look at the inside of the bones. The tracer is injected into a patient?s vein. It collects in areas of the bone and is detected by a special camera. Healthy bone appears gray to the camera, and areas of injury, such as those caused by a tumor, appear dark.

- **Computed tomography (CT or CAT) scan** [5]**.** A CT scan creates a three-dimensional picture of the inside of the body with an x-ray machine. A computer then combines these images into a detailed, cross-sectional view that shows any abnormalities or tumors. For Ewing sarcoma, a CT scan of the chest will be done to see if the tumor has spread to the lungs. A CT scan can also be used to measure the tumor?s size. Sometimes, a special dye called a contrast medium is given before the scan to provide better detail on the image. This dye can be injected into a patient?s vein or given as a liquid to swallow.

- **Positron emission tomography (PET) scan** [6]**.** A PET scan is a way to create pictures of organs and tissues inside the body. A small amount of a radioactive sugar substance is injected into the patient?s body. This sugar substance is taken up by cells that use the most energy. Because cancer tends to use energy actively, it absorbs more of the radioactive substance. A scanner then detects this substance to produce images of the inside of the body. For Ewing sarcoma, an integrated PET/CT scan [7] is often more sensitive than a PET scan alone.

- **Magnetic resonance imaging (MRI)** [8]**.** An MRI uses magnetic fields, not x-rays, to produce detailed images of the body. MRI can also be used to measure the tumor?s size. A special dye called a contrast medium is given before the scan to create a clearer picture. This dye can be injected into a patient?s vein or given as a liquid to swallow.

Surgical tests

- **Biopsy** [9]**.** A biopsy is the removal of a small amount of tissue for examination under a microscope. If the tumor is in an arm or leg, an orthopedic oncologist or an interventional radiologist who has experience with Ewing sarcoma should perform the biopsy. An orthopedic oncologist is a doctor who specializes in cancers of the musculoskeletal system.

  During the procedure, the doctor may take a sample of the tumor, bone marrow (see below), or both. Other tests can suggest that cancer is present, but only a biopsy can make a definite diagnosis. A pathologist then analyzes the sample(s) removed during the biopsy. A pathologist is a doctor who specializes in interpreting laboratory tests and evaluating cells, tissues, and organs to diagnose disease.

- **Bone marrow aspiration and biopsy** [10]**.** These two procedures are similar and often done at the same time to examine the bone marrow. Bone marrow has both a solid and a liquid part. A bone marrow aspiration removes a sample of the fluid with a needle. A bone marrow biopsy is the removal of a small amount of solid tissue using a needle.

A pathologist then analyzes the sample(s). A common site for a bone marrow aspiration and biopsy is the hipbone in the lower back. The skin in that area is usually numbed with medication beforehand, and other types medication to block the awareness of pain may be used.

Other laboratory tests

Other laboratory tests may be done on the tissue sample(s) removed during a biopsy to learn more about the tumor.

- **Immunohistochemistry.** This test detects Ewing sarcoma cells in the tissue sample.
- **Cytogenetic tests and reverse transcription polymerase chain reaction (RT-PCR).** These tests find out if the genetic changes that characterize Ewing sarcoma cells are present in the sample.

After diagnostic tests are done, your child?s doctor will review all of the results with you and your child. If the diagnosis is cancer, these results also help the doctor describe the cancer; this is called staging.

The next section in this guide is Stages [11], *and it explains the system doctors use to describe the extent of the disease. Or, use the menu on the side of your screen to choose another section to continue reading this guide.*

Links:
[1] http://www.cancer.net/cancer-types/ewing-sarcoma-childhood/diagnosis
[2] http://www.cancer.net/about-us
[3] http://www.cancer.net/node/24716
[4] http://www.cancer.net/node/24410
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