Childhood Cancer - Diagnosis

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Diagnosis

Doctors use many tests to diagnose cancer and find out if it has metastasized (spread). Some tests may also determine which treatments may be the most effective. For most types of cancer, a biopsy or surgery to remove as much of the tumor as possible is the only way to make a definitive diagnosis. 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 cancer has metastasized. Your child?s doctor may consider these factors when choosing a diagnostic test:

- Age and medical condition
- Type of cancer suspected
- Severity of symptoms
- Previous test results

In addition to a physical examination, the following tests may be used to diagnose childhood cancer:

Blood tests [2]. Routine blood tests measure the number of different types of cells in a person?s blood. Levels of certain cells that are too high or too low can indicate the presence of certain types of cancer.

Biopsy. [3] A biopsy is the removal of a small amount of tissue for examination under a microscope. Other tests can suggest that cancer is present, but except for certain types of brain tumors, only a biopsy can make a definite diagnosis. The type of biopsy performed depends on the location of the cancer. The sample removed from the biopsy is analyzed by a pathologist (a doctor who specializes in interpreting laboratory tests and evaluating cells, tissues, and organs to diagnose disease).

Bone marrow aspiration [4]. A bone marrow biopsy is the removal of a sample of bone marrow, usually from the back of the hipbone, with a needle. The skin in that area is usually numbed with medication beforehand, and other types of anesthesia (medication to block the awareness of pain) may be used. People who receive conscious sedation are usually able to speak and respond during the procedure and may not have any memory of the procedure afterward.

Lumbar puncture (spinal tap). A lumbar puncture is a procedure in which a doctor uses a needle to take a sample of cerebrospinal fluid (CSF) to look for cancer cells, blood, or tumor markers (substances found in higher than normal amounts in the blood, urine, or body tissues of people with certain kinds of cancer). CSF is the fluid that flows around the brain and the spinal cord. Doctors generally give the child an anesthetic to numb the lower back before the procedure.

Ultrasound [5]. An ultrasound uses sound waves to create a picture of the internal organs.

Computed tomography (CT or CAT) scan [6]. 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. Sometimes, a contrast medium (a special dye) is injected into a patient?s vein to provide better detail. It is important to have this test done in a pediatric specialty center where they can be supervised by pediatric radiologists. These centers are aware of the potential risks of radiation exposure from a CT scan.

Magnetic resonance imaging (MRI) [7]. An MRI uses magnetic fields, not x-rays, to produce detailed images of the body. A contrast medium may be injected into a patient?s vein to create a clearer picture.

Positron emission tomography (PET) scan [8]. A PET scan is a way to create pictures of organs and tissues inside the body. A small amount of a radioactive substance is injected into a patient?s vein. This substance is absorbed mainly by organs and tissues 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.

Scans or radioisotope studies. In these procedures, a material (called a tracer) is injected into the body and then followed with a special camera or x-ray to see where the material goes. These studies can find abnormalities in the liver, brain, bones, kidneys, and other organs.

Many of these tests may be repeated during and after treatment to determine the effectiveness of the treatment.

Learn more about what to expect when your child has common tests, procedures, and scans [9]. In addition, review tips and guidance [10] on how to prepare your child for medical procedures.

After these diagnostic tests are done, your child?s doctor will review all of the results with you. If the diagnosis is cancer, these results also help the doctor categorize or describe the cancer; this is called staging. Learn more about the first steps to take after a diagnosis of cancer [11].

Links:
[1] http://www.cancer.net/about-us
[2] http://www.cancer.net/node/24716
[3] http://www.cancer.net/node/24406
[4] http://www.cancer.net/node/24409
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