Adult Hodgkin Lymphoma

Adult Hodgkin lymphoma is a cancer of the lymph system. Lymph tissue is found throughout the body. Hodgkin lymphoma can begin in almost any part of the body. It can spread to almost any tissue or organ in the body. Being young, male and having had the virus that causes mononucleosis are all things that make you more likely to get Adult Hodgkin Lymphoma.

There are two main types of Hodgkin lymphoma:

- Classical.
- Nodular lymphocyte-predominant.

Adult Hodgkin lymphoma is a type of cancer that develops in the lymph system. This is part of the body's immune system. The lymph system is made up of the following:

- Lymph: Colorless, watery fluid that travels through the lymph system and carries white blood cells called lymphocytes. Lymphocytes protect the body against infections and the growth of tumors.
- Lymph vessels: A network of thin tubes that collect lymph from different parts of the body and return it to the bloodstream.
- Lymph nodes: Small, bean-shaped structures that filter lymph and store white blood cells that help fight infection and disease. When you have an infection, this is what is often called "swollen glands". Lymph nodes are located along the network of lymph vessels found throughout the body. Clusters of lymph nodes are found in the:
  - Underarm.
  - Pelvis.
  - Neck.
  - Abdomen.
  - Groin.
- Spleen: Located on the left side of the abdomen near the stomach. This organ:
  - Makes lymphocytes.
  - Filters the blood.
  - Stores blood cells.
  - Destroys old blood cells.
- Thymus: An organ in which lymphocytes grow and multiply. The thymus is in the chest behind the breastbone.
- Tonsils: Two small masses of lymph tissue at the back of the throat. The tonsils produce lymphocytes.
- Bone marrow: The soft, spongy tissue in the center of large bones. Bone marrow produces white blood cells including:
  - Lymphocytes.
  - Red blood cells.
  - Platelets.

CAUSES

Risk factors for adult Hodgkin lymphoma include the following:

- Being in young or late adulthood.
- Being male.
- Being infected with the Epstein-Barr virus.
- Having a first-degree relative (parent, brother, or sister) with Hodgkin lymphoma.

SYMPTOMS

Other conditions may cause the same symptoms. A caregiver should be consulted if any of the following problems do not go away:

- Painless, swollen lymph nodes in the neck, underarm, or groin.
- Fever for no known reason.
- Drenching night sweats.

- Weight loss for no known reason.
- Itchy skin.
- Feeling very tired.

DIAGNOSIS

Tests that examine lymph nodes are used to find and diagnose adult Hodgkin lymphoma. The following tests and procedures may be used:

- Physical exam and history: A history of the your past illnesses and treatments will be taken. An exam of the body will check general signs of health. This includes looking for signs of disease. This may be paying special attention to lumps, swollen glands or anything else that seems unusual.
- A complete blood count (CBC) is done. The CBC is used to test for, diagnose, and monitor many different conditions.
- Your blood is checked for the following:
  - The number of red blood cells, white blood cells, and platelets.
  - The amount of hemoglobin (the protein that carries oxygen) in the red blood cells.
  - The portion of the sample made up of red blood cells.
- Sedimentation rate: A procedure in which a sample of blood is drawn and checked for the rate at which the red blood cells settle to the bottom of the test tube.
- Blood chemistry studies: A procedure in which a blood sample is checked to measure the amounts of certain substances in the blood. An unusual (higher or lower than normal) amount of a substance can be a sign of disease in the organ or tissue that makes it.
- Chest x-ray: An x-ray of the organs and bones inside the chest. An x-ray is a type of energy beam that can go through the body and onto film, making a picture of areas inside the body.
- CT scan (CAT scan): These are specialized x-rays. A dye may be injected into a vein or swallowed to help the organs or tissues show up better. For adult Hodgkin lymphoma, CT scans of the chest, abdomen, and pelvis are taken. A CT scan may also be known as:
  - Computed tomography.
  - Computerized tomography.
  - Computerized axial tomography.
- PET scan (positron emission tomography scan): A procedure to find malignant tumor cells in the body. A small amount of radioactive glucose (sugar) is injected into a your vein. The PET scanner rotates around the body and makes a picture of where glucose is being used in the body. Malignant tumor cells show up brighter in the picture. These tumor cells are more active and take up more glucose than normal cells do.
- Laparotomy: A surgical procedure in which an incision (cut) is made in the wall of the abdomen to check the inside of the abdomen for signs of disease. The size of the incision depends on the reason the laparotomy is being done. Sometimes organs are removed or tissue samples are taken and checked under a microscope for signs of disease. This procedure is done only if it is needed to make decisions about treatment.
- Thoracentesis: The removal of fluid from the space between the lining of the chest and the lung. The fluid is removed using a needle. A pathologist views the fluid under a microscope to look for cancer cells.
- For pregnant women with Hodgkin lymphoma, staging tests protect the fetus from harmful radiation are used. These include:
  - MRI (magnetic resonance imaging): A procedure that uses a magnet, radio waves, and a computer to make a series of detailed pictures of areas inside the body. This procedure is also called nuclear magnetic resonance imaging (NMRI).
  - Ultrasound exam: A procedure in which high-energy sound waves (ultrasound) are bounced off internal tissues or organs and make echoes. The echoes form a picture of body tissues called a sonogram
- Often a small piece of tissue is removed. This is called a biopsy. A pathologist (specialist in looking at tissues) will examine the tissue. The specialist then looks for cancer cells, especially Reed-Sternberg cells. Reed-Sternberg cells are common in classical Hodgkin lymphoma. Below are different types of biopsies performed:
  - Lymph node biopsy: The removal of all or part of a lymph node.

- Excisional biopsy: The removal of an entire lymph node.
- Incisional biopsy: The removal of part of a lymph node.
- Core biopsy: The removal of part of a lymph node using a wide needle.
- Bone marrow aspiration and biopsy: The removal of bone marrow, blood, and a small piece of bone by inserting a hollow needle into the hipbone or breastbone.

➢ Immunophenotyping: A test in which the cells in a sample of blood or bone marrow are looked at under a microscope to find out if malignant lymphocytes (cancer) began from the B lymphocytes or the T lymphocytes.

STAGING

After adult Hodgkin lymphoma has been diagnosed, tests are done to find out if cancer cells have spread within the lymph system or to other parts of the body. The process used to find out if cancer has spread within the lymph system or to other parts of the body is called staging. The information gathered from the staging process determines the stage of the disease. It is important to know the stage in order to plan treatment. Adult Hodgkin lymphoma may be described as follows:

➢ A: The patient has no symptoms.
➢ B: The patient has symptoms such as fever, weight loss, or night sweats.
➢ E: "E" stands for extranodal and means the cancer is found in an area or organ other than the lymph nodes or has spread to tissues beyond, but near, the major lymphatic areas.
➢ S: "S" stands for spleen and means the cancer is found in the spleen.

The following stages are used for adult Hodgkin lymphoma:

➢ Stage I - Cancer is found in one lymph node group.
  - Stage IE: Cancer is found in an area or organ other than the lymph nodes.

➢ Stage II - Cancer is found in two or more lymph node groups on the same side of the diaphragm (the thin muscle below the lungs that helps breathing and separates the chest from the abdomen).
  - Stage IIE: Cancer is found in an area or organ other than the lymph nodes and in lymph nodes near that area or organ. Cancer may have spread to other lymph node groups on the same side of the diaphragm.

➢ Stage III - Cancer is found in lymph node groups on both sides of the diaphragm.
  - Stage IIIE: Cancer is found in lymph node groups on both sides of the diaphragm and in an area or organ other than the lymph nodes.
  - Stage IIIS: Cancer is found in lymph node groups on both sides of the diaphragm and in the spleen.
  - Stage IIIS+E: Cancer is found in lymph node groups on both sides of the diaphragm, in an area or organ other than the lymph nodes, and in the spleen.
  - Stage III(1): Cancer is found only in the upper abdomen above the renal vein.
  - Stage III(2): Cancer is found in lymph nodes in the pelvis and/or near the aorta.

➢ Stage IV - the cancer either:

1. Is found throughout one or more organs other than the lymph nodes and may be in lymph nodes near those organs.
2. Is found in one organ other than the lymph nodes and has spread to lymph nodes far away from that organ.

In stage IV, Adult Hodgkin lymphoma may be grouped for treatment as follows:

- Early Favorable.
- Early Unfavorable.
- Advanced Favorable.
- Advanced Unfavorable.

TREATMENT

There are different types of treatment for patients with adult Hodgkin lymphoma. The treatment is generally planned by a team of caregivers with expertise in treating lymphomas. Treatment varies with the stage of your disease. Treatment for adults may be different than treatment for children. Hodgkin lymphoma may also occur in patients who have acquired immunodeficiency syndrome (AIDS); these patients require special treatment. Choosing the most appropriate cancer treatment is a decision that ideally involves the patient, family, and health

care team. Three types of standard treatment are used:

- Chemotherapy. This is treatment with medications which kill cancer.
- Radiation therapy. This is high dose x-ray treatment of the tumor.
- Surgery. This is done to remove areas high in tumor such as the spleen.

New types of treatment are being tested in clinical trials. These include the following:

- High-dose chemotherapy.
- Radiation therapy with stem cell transplant.

HODGKIN LYMPHOMA DURING PREGNANCY

When Hodgkin lymphoma is diagnosed in the second half of pregnancy, most patients can delay treatment until after the baby is born. Treatment of Hodgkin lymphoma during the second half of pregnancy may include the following:

- Watchful waiting, with plans to induce delivery when the fetus is 32 to 36 weeks old.
- Systemic chemotherapy using one or more drugs.
- Steroid therapy.
- Radiation therapy to relieve breathing problems caused by a large tumor in the chest.
- Recurrent Adult Hodgkin Lymphoma.

Treatment of recurrent Hodgkin lymphoma may include the following:

- Combination chemotherapy.
- Combination chemotherapy followed by high-dose chemotherapy and stem cell transplant with or without radiation therapy.
- Radiation therapy with or without chemotherapy.
- Chemotherapy as palliative therapy to relieve symptoms and improve quality of life.
- A clinical trial of high-dose chemotherapy and stem cell transplant.
- This summary section refers to specific treatments under study in clinical trials, but it may not mention every new treatment being studied. Information about ongoing clinical trials is available from the NCI Web site.

For Hodgkin lymphoma during pregnancy, treatment options also depend on:

- The wishes of the patient.
- The age of the fetus.

Adult Hodgkin lymphoma can often be cured if found and treated early.

Get More Information From the National Cancer Institute's (NCI's)
1-800-4-CANCER (1-800-422-6237)
TTY at 1-800-332-8615.
www.cancer.gov

Document Released: 03/26/2009 Document Re-Released: 09/26/2009
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