LYMPHOMA
RESEARCH • FOUNDATION

Getting the Facts

Helpline: (800) 500-9976
helpline@lymphoma.org

Hodgkin Lymphoma

Overview

Lymphoma is the most common blood cancer. The two main forms of lymphoma are Hodgkin lymphoma (HL) and non-Hodgkin lymphoma (NHL). Lymphoma occurs when cells of the immune system called lymphocytes, a type of white blood cell, grow and multiply uncontrollably. Cancerous lymphocytes can travel to many parts of the body, including the lymph nodes, spleen, bone marrow, blood, or other organs, and form a mass called a tumor. The body has two main types of lymphocytes that can develop into lymphomas: B lymphocytes (B cells) and T lymphocytes (T cells).

HL, also known as Hodgkin disease, represents about 10 percent of all lymphomas. Approximately 8,300 new cases of HL are diagnosed in the United States each year. Although HL can occur in both children and adults, it is most commonly diagnosed in young adults between the ages of 20 and 34 years.

HL is characterized by the presence of very large cells called Reed-Sternberg (RS) cells, although other abnormal cell types may be present. HL usually starts in the lymph nodes; however, it often spreads from one lymph node to another and can also spread to other organs.

Common signs and symptoms of HL include swelling of the lymph nodes (which is often but not always painless), fever, night sweats, unexplained weight loss, itching, and lack of energy. While most people who have these complaints do not have HL, anyone with persistent symptoms should see a physician to make sure that lymphoma is not present.

Common Types of HL

HL is divided into two main classifications: classical HL (cHL), which accounts for 95 percent of cases, and nodular lymphocyte predominant HL. The type of HL a patient has may affect their treatment choices.

Classical HL

Nodular Sclerosis cHL is the most common subtype of HL, accounting for 60 to 80 percent of all cHL cases. In *nodular* (knot-like) sclerosis cHL, the involved lymph nodes contain RS cells mixed with normal white blood cells. The lymph nodes often contain a lot of scar tissue, which is where the name nodular *sclerosis* (scarring) originates. The disease is more common in women than in men, and it usually affects adolescents and adults under the age of 50. The majority of patients are cured with current treatments.

Mixed Cellularity cHL accounts for about 15 to 30 percent of all HL cases. The disease is found more commonly in men than in women, and it primarily affects older adults. With this type of cHL, the lymph nodes contain many RS cells in addition to several other cell types. More advanced disease is usually present by the time this subtype is diagnosed.

Lymphocyte-Rich cHL accounts for less than five percent of HL cases. The disease may be *diffuse* (spread out) or nodular in form and is characterized by the presence of numerous normal appearing lymphocytes and classic RS cells. This subtype of HL is usually diagnosed at an early stage in adults and has a low *relapse* (disease returns after treatment) rate.

Lymphocyte-Depleted cHL is rarely diagnosed (<1 percent of all cHL cases). Abundant RS cells and few normal lymphocytes are present in the lymph nodes of patients with this subtype, which is aggressive and usually not diagnosed until it is widespread throughout the body.

Lymphocyte Predominant HL

Nodular Lymphocyte Predominant HL accounts for five percent of all HL cases. It affects men more often than women and is usually diagnosed before the age of 35. In nodular lymphocyte predominant HL, most of the lymphocytes found in the lymph nodes are normal (not cancerous). Typical RS cells are usually not found in this subtype, but large, abnormal B cells (sometimes referred to as popcorn cells) can be seen as well as small B cells, which may be distributed in a nodular pattern within the tissues. This subtype is usually diagnosed at an early stage and is not very aggressive. In many ways, this form of HL resembles *indolent* (slow-growing) B-cell NHL with late recurrences (that is, NHL that has returned after having disappeared for a while).

Treatment Options

The majority of patients with HL can be cured. Most patients treated for HL receive some form of chemotherapy, sometimes followed by radiation therapy, as their first treatment. Standard *frontline* (initial) chemotherapy for HL is ABVD (Adriamycin, bleomycin, vinblastine, and dacarbazine) with or without radiation therapy or other agents, depending on the patient's type and stage of HL as well as their overall health status. In 2018, brentuximab vedotin (Adcetris) in combination with chemotherapy was approved by the U.S. Food and Drug Administration (FDA) for frontline treatment of patients with Stage III or IV cHL. Other chemotherapy regimens may also be recommended by the physician, but not always as initial therapies. ABVD tends to be recommended for Stage I or II disease, but it may also be used to treat more advanced HL. BEACOPP, which includes bleomycin, etoposide, doxorubicin, cyclophosphamide, vincristine, procarbazine, and prednisone, may also be suggested for patients with more advanced-stage disease.

Stem cell transplantation is typically used in the *relapsed* (recurrence) or *refractory* (disease does not respond to treatment) setting. Several other chemotherapy regimens are used to treat patients with relapsed/refractory cHL. In addition, three new therapies including a targeted agent and *immunotherapy* (treatments that help promote the body's own immune response) drugs have been approved by the FDA. Brentuximab vedotin is approved by the FDA for the treatment of relapsed/refractory HL after failure of stem cell transplantation or after failure of two previous chemotherapy regimens in patients who are not eligible for stem cell transplantation, and as a consolidation treatment after autologous stem cell transplantation in patients with HL who are at high risk of disease relapse or progression. In May 2016, nivolumab (Opdivo) was approved by the FDA for the treatment of patients with cHL that has relapsed or progressed after autologous stem cell transplantation and post-transplantation brentuximab vedotin. In March 2017, pembrolizumab (Keytruda) was approved by the FDA for the treatment of adult and pediatric patients with refractory cHL. These agents have been very effective in the relapsed/refractory setting. For more information on relapsed and refractory HL, view the *Hodgkin Lymphoma: Relapsed/Refractory* fact sheet on the Lymphoma Research Foundation's (LRF's) website at lymphoma.org/publications.

Treatments Under Investigation

Although the cure rate in HL is already high (>75% in newly diagnosed patients), research continues to develop more effective therapies with fewer short- and long-term toxicities. Investigators are also looking for ways to treat the minority of patients who are refractory to treatment and those who relapse. Many promising therapies are currently under investigation in clinical trials for HL including:

- Anti-CD30-CAR T cells
- Atezolizumab (Tecentriq)
- Bortezomib (Velcade)
- Carfilzomib (Kyprolis)
- Everolimus (Afinitor)
- Ibrutinib (Imbruvica)
- Lenalidomide (Revlimid)
- Mocetinostat (MGCD0103)
- Ruxolitinib (Jakafi)
- Umbralisib

Clinical Trials

Clinical trials are crucial in identifying effective drugs and determining optimal doses for patients with lymphoma. Patients interested in participating in a clinical trial should view the *Understanding Clinical Trials* fact sheet on LRF's website at lymphoma.org/publications, talk to their physician, or contact the LRF Helpline for an individualized clinical trial search by calling (800) 500-9976 or emailing helpline@lymphoma.org.

Follow-up

Patients with lymphoma should have regular visits with a physician who is familiar with their medical history and the treatments they have received. Medical tests (such as blood tests and positron emission tomography [PET]/computed tomography [CT] scans) may be required at various times during remission to evaluate the need for additional treatment. Since HL is a highly curable malignancy mostly affecting young people with long life expectancy, there is a growing number of HL survivors who may have special medical needs such as screening for secondary cancers or monitoring for long-term toxicities of therapy. Additional resources for adolescents and young adults living with cancer are available on LRF's website at lymphoma.org/eraselymphoma.

Patients and their caregivers are encouraged to keep copies of all medical records and test results as well as information on the types, amounts, and duration of all treatments received. This documentation will be important for keeping track of any side effects resulting from treatment or potential disease recurrences.

Support

A lymphoma diagnosis often triggers a range of feelings and concerns. In addition, cancer treatment can cause physical discomfort. One-to-one peer support programs, such as LRF's *Lymphoma Support Network*, connect patients and caregivers with volunteers who have experience with HL, similar treatments, or challenges, for mutual emotional support and encouragement. Patients and loved ones may find this information useful whether the patient is newly diagnosed, in treatment, or in remission.

Resources

LRF offers a wide range of resources that address treatment options, the latest research advances, and ways to cope with all aspects of HL, including our award-winning mobile app. LRF also provides many educational activities, from in-person meetings to teleconferences and webcasts for people with lymphoma, as well as our *Understanding Hodgkin Lymphoma* patient guide and HL e-Updates that provide the latest disease-specific news and treatment options. To learn more about any of these resources, visit our websites at lymphoma.org/HL or lymphoma.org, or contact the LRF Helpline at (800) 500-9976 or helpline@lymphoma.org.

Contact the Lymphoma Research Foundation
Helpline: (800) 500-9976
helpline@lymphoma.org
Website: lymphoma.org

Medical reviewer:
Jakub Svoboda, MD
University of Pennsylvania

Supported through grants from:
Bristol-Myers Squibb
Celgene
Genentech
A Member of the Roche Group
Biogen
SeattleGenetics

Stay Connected through our social media

Last Updated February 2018