T-Cell Lymphoma

Overview
Lymphoma is the most common blood cancer. The two main forms of lymphoma are Hodgkin lymphoma 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).

T-cell lymphomas account for approximately 15 percent of all NHLs in the United States. A similar lymphocyte called a natural killer (NK) cell shares many features with T-cells. When NK cells become cancerous, the cancer is called NK or NK/T-cell lymphoma and is generally grouped with other T-cell lymphomas. There are many different forms of T-cell lymphomas, some of which are extremely rare. T-cell lymphomas can be aggressive (fast-growing) or indolent (slow-growing).

Lymphomas are often, but not always, named from a description of the normal cell that leads to cancer. The general term peripheral T-cell lymphoma (PTCL) refers to the entire group of mature or “post-thymic” T-cell lymphomas (arise from mature T-cells), which distinguishes them from the immature T-cell lymphomas such as acute lymphocytic leukemia (ALL) or lymphoblastic lymphoma. Under this broad meaning, almost all types of T-cell lymphoma fall under the category of PTCL.

Common Types of T-cell Lymphoma
Peripheral T-cell Lymphoma Not Otherwise Specified (PTCL-NOS) refers to a group of diseases that do not fit into any of the other subtypes of PTCL. PTCL-NOS is the most common PTCL subtype, making up about one-quarter of all PTCLs. It is also the most common of all the T-cell lymphomas. The term PTCL can be confusing as it can refer to the entire spectrum of mature T-cell lymphomas or sometimes to this specific subtype, PTCL-NOS, only. Although most patients with PTCL-NOS are diagnosed with their disease confined to the lymph nodes, sites outside the lymph nodes, such as the liver, bone marrow, gastrointestinal tract, and skin, may also be involved. This group of PTCLs is aggressive and requires combination chemotherapy upon diagnosis. For more information, see the Lymphoma Research Foundation’s (LRF) Peripheral T-Cell Lymphoma Fact Sheet.

Anaplastic Large Cell Lymphoma describes several types of T-cell lymphomas and accounts for approximately 12 percent to 15 percent of all T-cell lymphomas in adults and between 10 percent and 30 percent of all lymphomas in children. It can be divided into three types. There are two systemic (presents in lymph nodes or organs) subtypes and one non-systemic type. The systemic subtypes are anaplastic lymphoma kinase (ALK) positive or ALK negative anaplastic large cell lymphoma, depending on the presence or absence of an abnormal form of the ALK protein on the surface of the lymphoma cells. The non-systemic type is called primary cutaneous anaplastic large cell lymphoma, and it appears only on the skin. The systemic types are usually fast-growing, while the skin-only type is usually more slow-growing. For more information, see LRF’s Anaplastic Large Cell Lymphoma Fact Sheet.

Angioimmunoblastic Lymphoma is a fast-growing T-cell lymphoma accounting for 15 percent to 18 percent of all T-cell lymphomas in the United States. Initial symptoms often include swollen lymph nodes and systemic symptoms such as fever and rash. It is generally treated like other fast-growing T-cell lymphomas, but can be managed with milder therapies in certain circumstances. For more information, see LRF’s Angioimmunoblastic Lymphoma Fact Sheet.

Cutaneous T-cell Lymphoma accounts for two percent to three percent of all NHL cases and usually affects adults. The term cutaneous T-cell lymphoma describes a group of typically slow-growing cancers that appear on, and are most often confined to, the skin. Mycosis fungoides, which appears as skin patches or plaques, is the most common type of cutaneous T-cell lymphoma. Less common forms include Sézary syndrome, primary cutaneous anaplastic large cell lymphoma and lymphomatoid papulosis. For more information, see LRF’s Cutaneous T-Cell Lymphoma Fact Sheet.
Types of T-cell Lymphoma: Relatively Less Common

**Adult T-cell Leukemia/Lymphoma (ATLL)** is a rare form of T-cell lymphoma linked to infection by the human T-cell lymphotropic virus type 1 (HTLV-1) virus. This virus is commonly found in people from the Caribbean, parts of southern Japan, and central Africa, as well as sporadic cases from around the world. While people usually acquire the virus at birth or during breastfeeding, only about two percent who carry the virus will develop lymphoma. The great majority will remain asymptomatic carriers throughout their life. This lymphoma can be indolent (slow-growing) or aggressive (fast-growing). For more information, see LRF’s Adult T-Cell Leukemia/Lymphoma Fact Sheet.

**Blastic NK-cell Lymphoma** is a very rare cancer, affecting only a few people (usually adults) each year. This lymphoma was previously thought to arise from a T- or NK-cell. However, newer studies indicate that it may arise from another type of white blood cell called a plasma, or dendritic, cell. This lymphoma is fast-growing and can be difficult to treat. It can arise anywhere in the body. Dark red or purple skin lesions are a common feature.

**Enteropathy-type T-cell Lymphoma** is an extremely rare subtype of T-cell lymphoma that appears in the intestines and is strongly associated with celiac disease.

**Hematosplenic Gamma-delta T-cell Lymphoma** is an extremely rare and aggressive disease that starts in the liver or spleen. This lymphoma may occur in those with inflammatory bowel disease who are immunosuppressed (that is, their immune system was suppressed as part of treatment).

**Lymphoblastic Lymphoma** can appear in both B-cells and T-cells, but is much more common in T-cells, comprising 80 percent of all lymphoblastic lymphomas. This lymphoma is most often diagnosed in children. With intensive chemotherapy, the complete remission rate can be very high.

**Nasal NK/T-cell Lymphomas** are relatively rare in the United States, but common in Asia and parts of Latin America. It is a fast-growing lymphoma that typically originates in the lining of the nose or upper airway. It is treated with radiation and various combinations of chemotherapy.

**Treatment-related T-cell Lymphomas** sometimes appear after solid organ or bone marrow transplantation. The immune system suppression that is required to transplant patients can put them at risk for developing these lymphomas. Treatment-related T-cell lymphomas may require therapy that differs from the standard treatments normally used to treat these conditions.

Patients diagnosed with the rare forms of lymphoma should consult their medical team to find promising therapies or clinical trials.

**Treatment Options**

Because there are so many different types of T-cell lymphoma, treatment varies widely. Standard lymphoma therapies, including chemotherapy, radiation, stem cell transplantation, and surgery, may be effective. Patients diagnosed with the rare forms of lymphoma should consult their medical team to find promising therapies or clinical trials.

Treatments aimed at the skin, such as ultraviolet light therapy or electron beam therapy (a type of radiation that does not penetrate to internal organs), are effective for many slow-growing T-cell lymphomas that appear in the skin. Drugs that have been approved specifically for T-cell lymphomas of the skin include bexarotene (Targretin), denileukin diftitox (Ontak), romidepsin (Istodax), and vorinostat (Zolinza).

A procedure called extracorporeal photopheresis (ECPP) is approved to treat people with mycosis fungoides or Sézary syndrome. For this procedure, blood is removed from the patient and treated with ultraviolet light, and with drugs that become active when exposed to ultraviolet light. Once the blood has been treated, it is then returned back into the patient’s body.

Several agents are approved for the treatment of T-cell lymphomas. Pralatrexate (Folotyn) was approved in 2009 for relapsed (recurrence of the disease) or refractory (disease that is resistant to treatment) peripheral T-cell lymphoma. Romidepsin was approved in 2009 for the treatment of relapsed or refractory CTCL and in 2011 for the treatment of relapsed or refractory peripheral T-cell lymphoma.

**Treatments Under Investigation**

Treatment options for the different types of T-cell lymphomas are expanding as new treatments are discovered and current treatments are improved. For example, a pilot study of sorafenib
is examining the use of biomarkers in relapsed or refractory patients and a phase I/II study is currently investigating everolimus plus chemotherapy with CHOP in patients who were recently diagnosed with peripheral T-cell lymphomas.

Clinical Trials
Clinical trials are crucial for identifying effective new drugs and determining optimal doses for lymphoma patients. Patients interested in participating in a clinical trial should talk to their physician or contact LRF’s Helpline for an individualized clinical trial search by calling (800) 500-9976 or emailing helpline@lymphoma.org.

Follow-up
Lymphoma survivors should have regular visits with a physician who is familiar with their medical history as well as the treatments they have received.

Some treatments can cause long-term effects or late effects, which can vary based on duration and frequency of treatments, age, gender, and overall health of each patient at the time of treatment. The doctor will check for these effects during follow-up care.

Survivors 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 effects resulting from treatment or potential disease recurrences.

Resources
LRF offers a wide range of resources that address treatment options, the latest research advances, and how to cope with all aspects of lymphoma. LRF also provides many educational activities, from in-person meetings to teleconferences and webcasts. For more information about any of these resources, visit the website at www.lymphoma.org or contact the Helpline at (800) 500-9976 or helpline@lymphoma.org.