CONDITION

Burkitt lymphoma

Learn about Burkitt lymphoma, including its rapid growth, symptoms, diagnosis, intensive treatment, possible complications, and follow-up care.

WHAT IT IS
Rare fast-growing B-cell non-Hodgkin lymphoma

BODY SYSTEM
Immune and lymphatic systems

MAIN SYMPTOMS
Rapidly enlarging lump, abdominal swelling or pain, fever, night sweats

WHAT CAUSES IT
Acquired genetic changes, sometimes EBV-associated

HOW IT IS DIAGNOSED
Tissue biopsy with pathology and MYC testing

MAIN TREATMENT
Intensive combination chemotherapy

CAN IT BE CURED?
Yes, intensive chemotherapy can cure many

IS IT AN EMERGENCY?
Sometimes, with trouble breathing or severe abdominal pain

LONG-TERM OUTLOOK
Often curable with possible late effects

Overview

Burkitt lymphoma is a rare, fast-growing cancer of B lymphocytes. B lymphocytes are white blood cells that help the immune system recognize and fight infection. Burkitt lymphoma is a type of non-Hodgkin lymphoma.

The cancer can develop in lymph nodes, but it often affects organs outside the lymphatic system. Common sites include the abdomen, bone marrow, and the tissues around the brain and spinal cord. In some parts of the world, it frequently affects the jaw or other facial bones.

Burkitt lymphoma can grow over days rather than months. Prompt assessment and treatment are therefore important. Despite its rapid growth, it often responds well to intensive chemotherapy, and cure is possible for many children and adults.

Doctors recognize three main clinical patterns:

These patterns differ in where and in whom the disease tends to occur. Under the microscope, however, they have the same main biological features.

- Sporadic Burkitt lymphoma occurs worldwide and often involves the abdomen.
- Endemic Burkitt lymphoma occurs mainly in equatorial Africa and is commonly linked to Epstein-Barr virus. It often affects the jaw or facial bones in children.
- Immunodeficiency-associated Burkitt lymphoma develops in people whose immune systems are weakened, including some people living with HIV.

Symptoms

Symptoms can develop quickly. They depend on where lymphoma cells have collected and how much disease is present.

A rapidly enlarging lump may appear in the neck, armpit, groin, jaw, or another area. Abdominal disease can cause swelling, pain, nausea, vomiting, constipation, or a feeling of fullness after eating a small amount. A tumor in the bowel may sometimes cause blockage, bleeding, or a tear in the bowel wall.

Other possible symptoms include:

These symptoms can have many causes other than lymphoma. A new or rapidly growing mass, persistent abdominal swelling, or unexplained symptoms should be assessed promptly rather than watched for several weeks.

Seek emergency care for difficulty breathing, severe or worsening abdominal pain, repeated vomiting, fainting, new confusion, a seizure, sudden weakness, uncontrolled bleeding, or a major decrease in urine output.

- Unexplained fever
- Drenching night sweats
- Unintentional weight loss
- Fatigue or weakness
- Reduced appetite
- Easy bruising, bleeding, or frequent infections if the bone marrow is affected
- Headache, facial weakness, confusion, vision changes, or numbness if the nervous system is involved

- Testicular swelling or pain

Causes and risk factors

Burkitt lymphoma begins when a B lymphocyte develops genetic changes that disrupt normal control of cell growth. Most cases involve a rearrangement of the MYC gene. A gene rearrangement means that genetic material has moved to an abnormal position. This causes MYC to remain highly active, driving the cell to divide rapidly.

These changes are acquired during a person's life. They are not usually inherited, and having Burkitt lymphoma does not generally mean that close relatives face a high risk of developing it.

Epstein-Barr virus, or EBV, is associated with some cases. EBV is a common virus that causes infectious mononucleosis in some people. The association is strongest in endemic Burkitt lymphoma, but EBV alone is not enough to cause the cancer. Most people who have had EBV never develop lymphoma.

A weakened immune system is another risk factor. Burkitt lymphoma can occur in people living with HIV and in some people taking immune-suppressing medicines after an organ transplant. Effective HIV treatment has reduced many complications of HIV, but lymphoma can still occur even when HIV is being managed.

The disease is more common in children and adolescents than in older adults, although it can occur at any age. It is also more common in males. In most individual cases, there is no action the person took that clearly caused the lymphoma, and there is no established screening test for people without symptoms.

Diagnosis

Burkitt lymphoma cannot be diagnosed from symptoms or imaging alone. Diagnosis requires a biopsy, in which part or all of an abnormal lymph node or mass is removed for examination. Because an accurate classification affects treatment, specialists often prefer a larger tissue sample when it can be obtained safely.

A pathologist examines the cells under a microscope and performs tests for proteins on their surface. Burkitt lymphoma cells commonly show B-cell markers such as CD20, along with other characteristic markers. Nearly all the tumor cells are actively dividing.

Genetic testing, often using a method called fluorescence in situ hybridization, looks for a MYC rearrangement. This testing also helps distinguish Burkitt lymphoma from other aggressive B-cell lymphomas that may look similar but require a different treatment approach.

Once lymphoma is confirmed, tests determine where it is present and whether treatment needs to begin immediately. These may include:

Doctors use these findings to describe the disease's stage and risk level. Staging is important, but Burkitt lymphoma is treated with the goal of cure even when it is found in several parts of the body.

The diagnosis and initial assessment often move quickly. Care is usually coordinated by a hematologist-oncologist, a doctor who specializes in blood cancers. A second pathology review at a center experienced with lymphoma may be useful when test results are uncertain.

- Blood counts and tests of kidney and liver function
- Lactate dehydrogenase, or LDH, which may rise when lymphoma is growing rapidly
- Uric acid, potassium, phosphorus, and calcium levels to assess tumor lysis risk
- Testing for HIV and for hepatitis B and C, because the results can affect supportive care
- PET-CT or CT imaging to identify involved areas
- Bone marrow aspiration and biopsy
- Lumbar puncture to test the fluid around the brain and spinal cord

Treatment and management

Burkitt lymphoma is generally treated with combinations of chemotherapy medicines. Treatment is intensive but often lasts for a shorter total period than treatment for some slower-growing lymphomas. The exact program depends on age, disease risk, organ function, overall health, and whether the brain, spinal fluid, or bone marrow is involved.

Many treatment programs also include rituximab , an antibody medicine that targets the CD20 protein on B cells. Children and adults may receive different chemotherapy programs, and several accepted approaches are available. A cancer specialist should explain why a particular program fits the clinical situation.

Burkitt lymphoma can spread to the central nervous system, meaning the brain and spinal cord. Treatment therefore includes medicines that reach or protect this area. Some medicines are given into a vein at doses that enter the nervous system. Others may be placed directly into the spinal fluid through a lumbar puncture. This is called intrathecal chemotherapy.

One of the earliest treatment concerns is tumor lysis syndrome . When many lymphoma cells break apart at once, they release their contents into the blood. This can disturb mineral levels and damage the kidneys or heart. Tumor lysis can occur after treatment begins and, less

commonly, before treatment.

People at risk may be admitted to the hospital for their first phase of treatment. Prevention and monitoring can include intravenous fluids, frequent blood tests, heart monitoring when needed, and medicines that reduce uric acid. Dialysis is occasionally required if severe kidney problems develop.

Other supportive care may include:

Chemotherapy can affect fertility. When it is medically safe and will not delay urgent treatment, patients who may want biological children should be offered a prompt discussion about fertility preservation. Options depend on age, sex, health, and how quickly treatment must begin.

Surgery is mainly used to obtain a biopsy or address complications such as a blocked or damaged bowel. Removing a mass does not usually replace chemotherapy because lymphoma cells may be present elsewhere. Radiation therapy is not routinely central to treatment but may be considered in selected circumstances.

People living with HIV generally receive lymphoma treatment along with carefully coordinated antiretroviral therapy. The oncology and HIV teams review possible medicine interactions and plan infection prevention together.

- Medicines to prevent or treat nausea
- Blood or platelet transfusions
- Antibiotics or other infection treatment
- Measures to prevent certain infections during periods of immune suppression
- Nutrition support and treatment for mouth sores
- Pain control
- Emotional, practical, and social support

Complications

Complications may come from the lymphoma, its rapid breakdown during treatment, or the treatment itself.

Burkitt lymphoma can interfere with the bowel, kidneys, bone marrow, or nervous system. Bone marrow involvement may reduce healthy blood cells, leading to anemia, bleeding, or infection. A mass may press on an organ or block the flow of urine or intestinal contents.

Short-term treatment complications can include low blood counts, fever and infection, mouth

sores, diarrhea, nausea, fatigue, hair loss, nerve symptoms, and organ injury. The risks differ among treatment programs.

A fever during chemotherapy can be a sign of infection when white blood cell levels are low. Patients should follow their cancer team's specific instructions about which temperature requires an immediate call. They should not wait for a routine appointment if fever, shaking chills, breathing difficulty, unusual bleeding, severe diarrhea, confusion, or inability to drink develops.

Possible longer-term effects include fertility problems and damage to the heart, nerves, kidneys, hearing, or other organs, depending on the medicines used. Some survivors have a higher risk of developing another cancer later. Follow-up care is designed to watch for these effects without causing unnecessary testing.

Follow up

During treatment, follow-up is frequent. It commonly includes physical examinations, blood tests, and assessments for infection, tumor lysis, treatment side effects, and organ function. Imaging may be repeated at planned points to measure the lymphoma's response.

After treatment, visits become less frequent over time. The care team may ask about new lumps, fever, night sweats, weight loss, pain, abdominal symptoms, nerve changes, and recovery from treatment. Routine imaging practices vary, so patients should ask whether follow-up will rely mainly on symptoms and examinations or include scheduled scans.

Routine follow-up is also a time to review vaccinations, fertility, emotional health, school or work needs, heart health, and other possible late effects. Live vaccines may be unsafe during significant immune suppression, so vaccination plans should be discussed with the treating team.

Do not wait for a scheduled visit if symptoms return or a new mass grows rapidly. Emergency symptoms such as trouble breathing, a seizure, sudden weakness, severe abdominal pain, uncontrolled bleeding, or confusion require immediate care.

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