ALL (Acute Lymphoblastic Leukemia)

Acute Lymphoblastic Leukemia (ALL) is a type of blood cancer. It is also called acute lymphoid leukemia. There are several types of ALL.

CAUSES

The cause of ALL is still not known. There can be some genetic and environmental factors in some cases.

SYMPTOMS

- Poor appetite.
- Tiring easily
- Shortness of breath.
- Crankiness.
- Low-grade fevers.
- Bone pain.
- Joint pain.
- Pale skin.
- Bruising.
- Headache.
- Nosebleeds and easy bleeding from minor cuts.
- Swollen glands.
- Weight loss.

DIAGNOSIS

The diagnosis of ALL is made by tests such as:

- Blood tests to check blood cell counts and the shape of the blood cells (*morphology*).
- *Bone marrow* (parts of bone that make blood cells) sampling.
- Genetic testing.
- Spinal fluid for leukemia cells.

TREATMENT

The goal of treatment is to cure the ALL. Treatment of ALL is based on the child's age and testing results.

Treatment is given in phases. The first phase of treatment is called Induction Therapy. The goals of induction therapy are to:

- Kill as many ALL cells as possible.
- Bring the blood counts back to normal.
- Get rid of all signs of the disease.

Depending on the type of ALL, induction therapy may include:

- **Chemotherapy** (medicines that stops cancer cells from growing). These medicines either kill the cancer cells or stop them from dividing.
- **Intrathecal chemotherapy** (chemotherapy medicines placed in the fluid surrounding the spinal cord and brain. These are placed through a spinal tap). This treatment is done if the ALL has spread or to prevent the spread to the brain and spinal cord.
- **Radiation therapy** (treatment with x-rays). This is done to treat ALL that has spread from the blood or bone marrow. It is also done to prevent the spread to the spinal cord and brain.
- New treatments that are under investigation.

Your child's ALL is in remission when there are no signs or symptoms and the blood counts have returned to normal. Induction therapy produces a remission within about a month in 90% of children.

After remission, the goal of the next phase of treatment (consolidation/intensification therapy) is to:

- Kill any remaining inactive ALL cells not detected in the bone marrow or blood with more chemotherapy.
- Prevent ALL from getting into the lining of the spinal cord and brain. This may involve:
  - Intrathecal chemotherapy.
  - Radiation.

Restore the bone marrow's ability to make blood cells. This is done with a stem cell transplant. (Stem cells are a type of cell in the bone marrow or blood stream that make the 3 kinds of blood cells).

The next phase is often called the maintenance phase. During this phase, treatment is aimed at keeping the ALL in remission by killing any remaining ALL cells that could cause a relapse. Less intense chemotherapy treatments are used. These are given by mouth, injection and put into the spinal fluid.

Most of the medicines and treatments of childhood leukemia have a number of side effects. They often produce hair loss, feeling sick to your stomach (*nausea*), diarrhea and vomiting. Mouth sores and skin rashes are common. The treatments can also stop the bone marrow from producing normal amounts of various blood cells. This can lead to complications such as:

- Infection.
- Bleeding.
- Anemia.

Other treatments for ALL include:

- Antibiotics to prevent a type of lung infection.
- Diet supplements to help with nutrition.
- Blood transfusions to treat anemia and other low blood counts.
- Medicines to prevent or treat nausea, vomiting and other side effects of cancer treatments.

HOME CARE INSTRUCTIONS

When your child is on chemotherapy:

- You and your child and any visitors should wash hands often. Especially before meals, after being outside and after using the toilet.
- Keep your child's teeth and gums clean and well cared for. Use soft toothbrushes.
- Discuss the safety of immunizations for your child and family members given your child's diagnosis.
- When visiting a healthcare facility, ask about side entrances or waiting areas where your child will not be exposed to infections.
- Only take over-the-counter or prescription medicines for pain, discomfort, or fever as directed by your caregiver.
- Use a good sun block and clothing to prevent sun exposure.
- Usually it is recommended that the other family members receive an influenza shot every year.

SEEK MEDICAL CARE IF YOUR CHILD HAS:

- Cough or cold symptoms.
- Sore throat.
- Painful urination.
- Frequent diarrhea.
- Frequent vomiting.
- Skin rash.
- Been exposed to chicken pox or measles – especially if your child has not been immunized or is not immune to these illnesses.

SEEK IMMEDIATE MEDICAL CARE IF YOUR CHILD HAS:

- A fever of 100.4º F (38º C) or higher measured by mouth.
- Chills.
- Trouble breathing.
- Blood in urine or stools.

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