

THE MANIFESTATION ACUTE LYMPHOBLASTIC LEUKEMIA IN CHILDREN

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Abstract

Acute lymphoblastic leukemia (ALL) is fast-growing cancer of the white blood cells. Lymphocytes are a type of white blood cell that the body uses to fight infections. In ALL, the bone marrow makes lots of unformed cells called blasts that normally would develop into lymphocytes. However, the blasts are abnormal. They do not develop and cannot fight infections. The number of leukemia cells grows quickly. They crowd out the normal red blood cells, white blood cells and platelets the body needs. The symptoms a person with ALL has depend on how many normal blood cells they have. Symptoms also depend on how many leukemia cells there are and where they collect in the body. These common features are fatigue due mainly to anemia, fever, reflecting infections due to absence of mature leukocytes, bleeding, thrombocytopenia

Key word: Acute lymphoblastic leukemia

INTRODUCTION

Cancer in children and adolescent is rare. But Acute Lymphoblastic Leukemia (ALL) is the most common cancer in children, representing 23 percent of cancer diagnoses among children younger than 15 years of age. It occurs in about one of every 29,000 in the United States. Acute Lymphoblastic Leukemia (ALL) is neoplastic disease that occurs from somatic mutation in the progenitor of single lymphoid cell on one of several stages of the development. ALL occurs in approximately 80% of all leukemia cases in children. Peak incidence occurs in the age group of 2-5 year and affects boys more than girls.¹

Approximately 2500 new cases of ALL are diagnosed each year in United States, most cases occurring in individuals younger than fifteen years of age. ALL is almost twice as common in whites as in nonwhites. In the Caucasian population is 33 per million, compared 15 per million children and adolescents younger than 15 years in the African American population.¹ When a child has leukemia, the bone marrow, begins to make white blood cells that do not mature correctly, but continue to reproduce themselves. In healthy cells only reproduce when there is enough space for them to fit. The body can regulate the production of cells by sending signals when to stop. But in leukemia, these cells do not respond to the signals to stop and reproduce.²

Many environmental factors, may be caused leukemia. Such as exposure to ionizing radiation and electromagnetic fields, parental use of alcohol and tobacco have been investigated as potential risk factors, but none has been definitively shown to cause lymphoblastic leukemia.³ In ALL, a lymphoid progenitor cell becomes genetically altered and subsequently undergoes dysregulated proliferation and clonal expansion. In most cases, the pathophysiology of transformed lymphoid cells reflects the altered expression of genes whose products contribute to the normal development of B cells and T cells. One form of DNA abnormality that can cause leukemia, develop is a translocation (is the transfer of DNA from one chromosome to another). This abnormality can turn on oncogene which causes rapid cells division. In most cases of leukemia, DNA changes are acquired (occurring after birth) rather than inherited.⁴

Acute lymphoblastic leukemia (ALL) is a cancer of the white blood cells, the cells in the body that normally fight infections. ALL affects lymphoid cells. Leukemia cells are abnormal cells that cannot do what normal blood cells do. The abnormal cells are immature white blood cells that cannot help the body fight infections. Children with ALL often get infections and have fevers. Lymphocytes are carried throughout the body in lymph vessel. The lymph system is a network of thin tubes that reach into all parts of the body. There is lymph nodes are the small group of organs found along the lymph system branches. Lymph nodes are found in underarm, pelvis, neck and abdomen. The spleen, thymus, and tonsils are also part of lymph system.²

ALL may be first diagnosed in routine blood test. However additional test are typically necessary to examine blood and bone marrow. Diagnostic test for ALL may include bone marrow test and lumbar puncture.

As blood cells, leukemia cells travel through the body. Depending on the number of abnormal cells and where these cells collect. Patient with leukemia may have a number symptoms. Children with ALL frequently have low amounts of healthy red blood cells and platelets. As a result, there are not enough red blood cells to carry oxygen through the body. With this condition, called anemia, patients may look pale and feel weak and tired. When there are not enough platelets, patient bleed and bruise easily.⁵

Children with ALL generally present with signs and symptoms that reflect bone marrow infiltration and extramedullary disease. Because leukemia cells replace the bone marrow,

patients present with signs of bone marrow failure, including anemia, thrombocytopenia, and neutropenia.

Classification of ALL is based on an older classification system. Known as the French American British (FAB). Classification of ALL is based on the appearance of the cancer cells under microscope.²

L1: this type is the most common type of ALL in children. Lymphoblast are small cells.

L2: This 10 per cent for ALL cases in children

L3: Burkitt type leukemia.

Regardless of phenotype, the histologic appearance of ALL is similar. Normal tissue architecture is completely effaced by lymphoblast having scant cytoplasm and nuclei somewhat larger than those of small lymphocytes.

Clinical manifestations

The initial clinical symptoms of Acute lymphoblastic leukemia (ALL) vary little. The most common complaint are pyrexia, pallor, and tendency to hemorrhage from mucous membranes with purpuric areas on the skin. An early sign may be hemorrhage and pseudohypertrophy of gingival. A marked feature of the disease is ulceration of the mucosa. Manifestation include fatigue and pallor, petechiae, bleeding, and fever. In addition, leukemia cells spread may manifest as lymphadenopathy (enlarged lymph nodes), particularly in the neck or armpit. and hepatosplenomegaly. Other signs and symptoms of leukemia include weight loss, bone pain, joint pain and dyspnea. Some of the common symptoms of ALL include: fatigue, frequent infections, swollen or tender lymph nodes, paleness, easy bleeding or bruising, petechiae under the skin, weakness, shortness of breath. Children with ALL usually have high white blood cells count, however these high white blood cells do not function normally and do not provide adequate protection against infection. As a result infection or chronic illness may be sign of disease.^{1,2,4,5}

Another condition that may be result from ALL is thrombopenia, which is abnormally low number of platelet. This condition can lower the body's ability to repair holes in damaged

blood vessel and can cause excessive bleeding symptom, sometimes can include nosebleed, bleeding gums or excessive bruising. It also may cause petechiae.⁶

In ALL, the abnormal cells may collect in the brain or spinal cord, also called the *central nervous system* (CNS). The result may be headaches, seizures with or without vomiting although most children with disease do not have these symptoms. Careful neurologic examination to look for CNS involvement is important, because the treatment for leukemia with CNS involvement is different.¹

Although leukemia cells from different children with ALL often look very similar under the microscope, there are actually many distinctive subtypes of ALL. Most cases of leukemia are associated with changes in genes and chromosomes in the cancerous white blood cells.

ALL is diagnosed when blood and bone marrow samples show a large number of abnormal leukemic cells. To find out the type of ALL and how well it might respond to treatment, they have to test samples taken from the blood and bone marrow. The primary treatment for ALL is chemotherapy, and they have to specific drugs used for chemotherapy.

DISCUSSION

The chance of survival for children with ALL is depend on a number factors. The most important factor is receiving optimal care at center experienced in the treatment of the children with ALL. There are treatment for children all children with ALL. The primary treatment is chemotherapy. Now about 80 percent of children with ALL live five years or more.

Acute Lymphoblastic Leukemia (ALL) is the most common malignancy diagnosed in children, representing nearly one third of all pediatric cancers. ALL have abnormal proliferation and maturation of particular blood element. Eventually the host succumb to anemia, immunologic incompetence, infection and hemorrhage. Consult Dental treatment planned with hematologist. The dental treatment should be performed in short time as possible. Preventive and therapeutic advances in the management of infections such as the use platelet transfusion for the prevention and control of thrombocytopenic, hemorrhage. However in hematologic malignancies, infections is still the major cause of death. While many common bacterial

infections can be treated successfully, the more recent chemotherapeutic agent used in cancer treatment have led to even greater alteration in the host defense mechanisms. As a result, superinfections that were previously rarely encountered and that indeed would have been considered exotic have appeared and flourished. These emergent superinfections are proving themselves more and more the reasons for a fatal outcome of leukemia. Not only have they proved extremely difficult but also just as hard to treat. Concept in dental care should be directed to diagnosis of dental abscess or potential abscess to prevent the dissemination of infections and the promise of drug therapy for the primary disease. This care would include the extraction of teeth with total pulpal necrosis, formocresol pulpotomies on extensively decayed teeth, the failure rate of both calcium hydroxide and oxparapulpotomies being sufficiently high as to discourage their use in the presence of this disease entity. marginal gingival necrosis is virtually confined to areas of local accumulation of plaque; therefore, all plaque must be removed daily. Small, soft, multitufted tooth brushes can be used if the platelet level are sufficient (greater than 75,000). Water irrigation devices should never be employed. Choose the mouthrinses carefully.⁷

CONCLUSION

Acute Lymphoblastic Leukemia (ALL) is the most common malignancy diagnosed in children, representing nearly one third of all pediatric cancers. ALL have abnormal proliferation and maturation of particular blood element. Eventually the host succumb to anemia, immunologic incompetence, infection and hemorrhage. all plaque must be removed daily for prevent gingivitis severe. The dentist have to give carefully in dental treatment.

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