Journal of Leukemia
ISSN: 2329-6917
OPEN ACCESS Freely available online
Short Communication

The effect of Childhood Leukemia on Childhood health

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DESCRIPTION

Childhood leukemia is a type of childhood cancer that occurs in children. In 2018, juvenile leukemia was the most common childhood cancer, accounting for 29% of cancers in children aged 0-14 years. The most common type of leukemia in children is Acute Lymphoblastic Leukemia (ALL), which is followed by Acute Myeloid Leukemia (AML). Survival rates vary depending on the type of leukemia, however with ALL, they can approach 90%. Leukemia is a type of blood cancer known as a hematologic malignancy. It develops in the bone marrow, the soft inner part of the bone where new blood cells are made. When a child has leukemia, the bone marrow produces immature white blood cells. Healthy cells only will reproduce if there is enough space for them [1]. The body will regulate cell production by sending signals to stop production. When a child develops leukemia, the cells do not respond to the signals that tell them when to stop and when to make cells. The bone marrow becomes crowded, causing problems with the production of other blood cells. Excessive tiredness, easy bruising or bleeding, bone pain, and paleness are common signs and symptoms of childhood leukemia [2].

Types of childhood leukemia

Leukemia is classified as either "acute," which grows quickly, or "chronic," which grows slowly. The vast majority of childhood leukemia is acute, and adults are more than children to develop chronic leukemia. Acute leukemia develops quickly and deteriorate (over periods of days to weeks). Chronic leukemia takes longer to develop (months), yet they are more difficult to treat than acute leukemia. The following are among the most common types of leukemia in children.

Acute lymphoblastic leukemia: Acute Lymphocytic (or lymphoblastic) Leukemia (ALL) is the most common type of childhood leukemia, accounting for 75-80% of all diagnoses. ALL is an acute lymphoblastic leukemia that targets lymphocytes that are white blood cells that fight infection. When a patient has ALL, the bone marrow generates an unusually big number of immature white blood cells that fail to mature correctly. These white blood cells do not work correctly in the fight against infection. White blood cells grow excessively, crowding out some other blood cells in the bone marrow. Acute myelogenous leukemia [3,4].

Acute myelogenous leukemia: Acute Myelogenous Leukemia is another type of acute leukemia (AML). AML accounts for the majority of the remaining cases of childhood leukemia, representing for approximately 20% of all cases of childhood leukemia. AML is a type of blood cancer in which the bone marrow produces an abnormally high number of myeloblasts (immature white blood cells). The marrow continues to create aberrant cells, that crowd out other blood cells and unable to fight infection properly.

Acute promyelocytic leukemia: Acute Promyelocytic Leukemia (APL) is a type of myeloid leukemia (AML). Promyelocytes are produced and concentrate in the bone marrow in this leukemia. Patients with APL have such a specific chromosome translocation (a sort of genetic change). Genes on chromosome 15 change places with genes on chromosome17. This genetic change prevents promyelocytes from properly maturing [5].

Chronic myelogenous leukemia: Chronic Myelogenous Leukemia (CML) is a type of leukemia that develops slowly over months to years. CML is rare in children, but it does occur. CML patients produce an abnormally large amount of immature white blood cells, that crowd out all the healthy blood cells. In CML patients, a chromosome translocation occurs. Part of chromosome 9 separates and attaches to chromosome 22, enabling genetic material to be moved between chromosomes 9 and 22. The rearrangement of chromosomes changes the positions and functions of genetic markers, leading in uncontrolled proliferation of cells. Chronic Lymphocytic Leukemia (CLL) is a type of chronic leukemia that is relatively uncommon in children [6].

Myelomonocytic leukemia: In children Juvenile Myelomonocytic Leukemia (JMML) is a kind of leukemia in which myelomonocytic cells are overproduced. It is sometimes referred to as a myeloproliferative neoplasm. It is rare and most commonly affects children under the age of four. In JMML, bone marrow-derived myelomonocytic cells invade the spleen, lungs, and intestines [7,8].

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Received: 01-Dec-2022; Manuscript No. JLU-22-20102; **Editor assigned:** 05Dec-2022; Pre-Qc No. JLU-22-20102 (PQ); **Reviewed:** 26-Dec-2022; Qc No. JLU-22-20102; **Revised:** 02-Jan-2023, Manuscript No. JLU-22-20102 (R); **Published:** 09-Jan-2022, DOI: 10.35248/2329-6917.22 .10.003

Citation: Stephen D (2022) The Effect of Childhood Leukemia on Childhood health. J Leuk. 10:003.

Symptoms and signs childhood leukemia

The most of the initial symptoms of leukemia are caused by problems with bone marrow function. Children can experience a variety of symptoms. In acute leukemia, symptoms appear fast, although in chronic leukemia, symptoms appear slowly over time. Among symptoms of the various types of childhood leukemia are: Feelings of fatigue or weakness, regularly occurring infections or fever, bone and joint pain, refusal to walk, which is most likely due to bone pain or fatigue, easy bleeding or bruising (including petechiae), increased paleness of skin, abdominal pain or fullness, which may cause shortness of breath or loss of appetite, swollen lymph nodes under the arms, in the groyne, chest, and neck spleen or liver enlargement, weight loss, rash [9].

Causes of childhood leukemia: The cause of most cases of childhood leukemia is unknown. The majority of kids with leukemia have no known risk factors. According to one hypothesis, childhood Acute Lymphoblastic Leukemia (ALL) is caused by a two-step process that starts with a prenatal genetic mutation and then proceeds with infection exposure. While this theory is reasonable, there is currently insufficient evidence in patients to support or refute the connection between infection and the progression of ALL. There is evidence suggesting maternal alcohol consumption contributes to the development of AML in children. Indoor insecticide exposure has also been linked to childhood leukemia development. Coffee consumption during pregnancy (2-3 cups per day or more) has also been linked to childhood leukemia [10].

CONCLUSION

Treatment for childhood leukemia is based upon a number of factors, including the type of leukemia, leukemia characteristics, prognosis characteristics (children with worse prognostic characteristics receive more aggressive therapy) response to therapy, and disease extent at diagnosis. A team of health care professionals, comprising child oncologists, social workers, nursing assistant specialists, and pediatricians, is typically in control of treatment. Chemotherapy, stem cell transplant, radiation therapy, and targeted therapy are the four traditional types of treatments. Immunotherapy is another type of therapy that is currently being tested in clinical trials.

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