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Perspective

Clinical Outcomes and the Prognosis during Chemotherapy Induction in Adolescent Acute Lymphoblastic Leukemia

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DESCRIPTION

The second most frequent cause of death is cancer. Leukemia's, with an estimated incidence rate of 2.6 per 100,000 children, are often the most prevalent kinds of cancer in Palestinian children. The most common cancer-related fatality before the age of 20 is Acute Lymphoblastic Leukemia (ALL), which are also the most frequently diagnosed tumors in pediatric populations. More than 75% of pediatric leukemia's, according to some estimates, are ALL. In the US, roughly 6,000 new cases of ALL are diagnosed each year; 50% of these instances affect children and teenagers. In the US, Caucasians and Hispanics have higher rates of ALL than African Americans possess. Early lymphoid precursors (lymphoid stem or progenitor cells) with stalled maturation are the source of clonal proliferation in ALL. B-cell precursor immune phenotype, or B-ALL, is more common than T-cell precursor immune phenotype, or T-ALL, in the B-lineage. Approximately 80% of pediatric ALL patients have B-ALL. T-ALL patients, on the other hand, make up 10%-15% of all patients. Pediatric T-ALL patients have historically had inferior cure rates. ALL is characterized by chromosomal structural mutations, such as aneuploidy and translocations. B-ALL is categorized by the World Health Organization (WHO) based on its cytogenetic and molecular features. Chromosomes 44 and 51 are hypo diploid, and chromosomes 12 and 21 have translocations and KMT2A rearrangement, respectively. There are currently 9 subtypes that have been found and categorized by particular chromosomal translocations, rearrangements, and ploidy status. History has demonstrated that different subtypes of ALL have varying risks of disease progression and responses to available treatments. Fever, anemia-related symptoms (such as pallor, tachycardia, exhaustion, and headache), an increased risk of infection, and bleeding are possible clinical presentations of ALL. Currently, treatment regimens group patients according to their risk for receiving chemotherapy with a variety of drugs, which can result in cure rates of up to 90% in high-income nations. It is important to highlight that despite their initial positive reaction to medication, 10%-15% of patients relapse. One of the main reasons for death from children malignancies is thought to be this relapse. Early diagnosis and improving prognosis are therefore of utmost significance. Pediatric ALL is frequently diagnosed with physical exam, full blood count, and blood smears. Blast cells are frequently visible on blood smears. A definitive diagnosis can also be made using bone marrow biopsies. Lumbar punctures may also be performed to identify central nervous system involvement. Additionally, cytogenetics, clinical findings, and complete blood counts are usually considered when choosing a risk-stratified, multi-agent chemotherapy regimen.

There has been plenty of focus on the epidemiological and clinical characteristics of patients with ALL in various countries. In Palestine, there is a severe lack of coordination in the treatment of cancer, and many patients travel abroad for their care. Additionally adolescents with ALL continued to have lower long term overall survival and event free survival rates than young children (aged 1 to 9 years) with ALL. According to prior study, this difference results from a elevated risk of treatment resistance depression rather than an increased rate of relapse. Almost all cohorts of ALL patients received childhood treatment protocols have exhibited an age related rise in treatment related toxicity.

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