

Treatment for Chronic Lymphocytic Leukemia and Chronic Myeloid Leukemia

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DESCRIPTION

Chronic leukemia represents a diverse group of hematological malignancies characterized by the slow and progressive accumulation of abnormal white blood cells. Unlike acute leukemias, which are marked by the rapid proliferation of immature cells and a swift onset of symptoms, chronic leukemias develop gradually over months or years, often with subtler manifestations. The most common forms of chronic leukemia are Chronic Lymphocytic Leukemia (CLL) and Chronic Myeloid Leukemia (CML), each with distinct pathophysiological mechanisms, clinical presentations, and therapeutic strategies. Primarily affects older adults and originates from malignant B lymphocytes, which are critical components of the immune system. The disease typically progresses slowly, and many patients remain asymptomatic for extended periods. However, as CLL advances, it can lead to complications such as anemia, increased susceptibility to infections, and lymphadenopathy. On the other hand, is characterized by the overproduction of myeloid cells in the bone marrow and blood. It is strongly associated with the Philadelphia chromosome, a genetic abnormality resulting from a translocation between chromosomes 9 and 22. This chromosomal change leads to the production of the BCR-ABL fusion protein, which drives the uncontrolled growth of myeloid cells. CML typically progresses through three phases: Chronic, accelerated, and blast crisis, each with distinct clinical and therapeutic implications.

The understanding of chronic leukemia has evolved significantly over the years, with advancements in genetic research, diagnostic techniques, and treatment modalities. Modern therapies, such as targeted treatments and tyrosine kinase inhibitors, have markedly improved patient outcomes and transformed chronic leukemia from a life-threatening condition to a manageable chronic illness for many. This overview will delve into the aetiology, clinical features, diagnostic approaches, and treatment options for chronic leukemia, providing insights into how these disorders are managed and the ongoing advancements aimed at improving patient care and survival. Chronic leukemia is a type of cancer that affects the blood and bone marrow, characterized by the slow accumulation of abnormal white blood cells. Unlike

acute leukemias, which progress rapidly, chronic leukemias develop over months or even years. The two main types of chronic leukemia are Chronic Lymphocytic Leukemia (CLL) and Chronic Myeloid Leukemia (CML). Each type has distinct characteristics, treatment approaches, and prognoses. Chronic Lymphocytic Leukemia is the most common form of leukemia in adults. It originates from the accumulation of abnormal B lymphocytes, a type of white blood cell responsible for antibody production. The malignant cells in CLL are characterized by their slow growth and accumulation in the blood, bone marrow, and lymphoid tissues. The exact cause of CLL remains unknown, but genetic mutations and environmental factors are believed to play a role. Common genetic abnormalities associated with CLL include deletions of chromosome 13q, mutations in the *TP53* gene, and trisomy 12. CLL often progresses without noticeable symptoms in its early stages. Symptoms may include swollen lymph nodes, an enlarged spleen (splenomegaly), and an enlarged liver (hepatomegaly). As the disease advances, patients may experience fatigue, weight loss, frequent infections, and easy bruising or bleeding. Diagnosis of CLL typically involves a Complete Blood Count (CBC) showing elevated lymphocyte counts, bone marrow biopsy, and flow cytometry to identify the specific cell markers. Genetic tests may also be conducted to determine the presence of mutations or chromosomal abnormalities. Treatment for CLL is tailored to the patient's age, overall health, and disease stage. For early-stage CLL, "watchful waiting" or active surveillance may be recommended.

CONCLUSION

Chronic leukemia encompasses two primary types are CLL and CML, each with distinct characteristics and treatment approaches. Advances in genetic understanding and targeted therapies have greatly improved the management and prognosis of chronic leukemia, transforming it from a fatal diagnosis to a manageable chronic condition for many patients. Ongoing research continues to enhance treatment options and outcomes, offering hope for better management and potential cures in the future.

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