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Phases of Chronic Myeloid Leukemia

By Yolanda Smith, BPharm

Chronic myeloid leukemia (CML) is a type of cancer that begins in the cells in the bone marrow that are involved in the production of blood cells. The condition can be classified into 3 main phases according to specific characteristics, which helps to guide treatment decisions.

Without medical intervention, the condition progresses from the chronic phase to an accelerated phase and finally to the blast phase. The final stage is a blast crisis, which is similar in nature to acute leukemia. However, treatment can help prevent this progression of phases by stopping the accumulation of additional chromosomal abnormalities.

Chronic Phase

The majority of patients (approximately 85%) are diagnosed with chronic myeloid leukemia while in the chronic phase, also known as the stable phase.

In this phase, the symptoms are usually subtle or unnoticeable. Patients may report fatigue, weight loss, abdominal fullness, or pain in the joints, hips, or left side. However, most individuals are able to live a relatively normal life that is uninhibited by the health condition. It is relatively stable and can last a variable length of time depending on factors such as the diagnosis and the treatment methods implemented.

Accelerated Phase

Some patients may already have reached the accelerated phase by the time they are diagnosed. Characteristic features of the accelerated phase, as described by the World Health Organization (WHO), include:

- Blood or bone marrow: 10-19% myeloblasts or >20% basophils
- Platelet count: <100,000 without treatment or >1,000,000 with unresponsive treatment
- Cytogenetic evolution: evidence of additional chromosomal abnormalities
- Splenomegaly: increase in number of white blood cells without responding to therapy

If any of these criteria are met, the individual is said to be in the accelerated phase of CML. At this stage, it becomes more difficult to manage the condition and treatment techniques are often less effective than in the chronic phase.

In this phase, the symptoms of the disease become more obvious. Most patients will begin to feel fatigued and also experience weight loss, enlargement of the spleen, and pain in the trunk of the body.

Blast Phase

Blast phase, also known as blast crisis or acute phase, is similar to acute leukemia and is marked by the rapid progression of the disease and a poor prognosis. Characteristic features of the blast phase include:

- Blood or bone marrow: >20% lymphoblasts or myeloblasts
- Bone marrow biopsy: presence of large clusters of blasts
- Chloroma: development of leukemia outside the bone marrow

In this phase, many blast cells fill the bone marrow and they are also more highly concentrated in the bloodstream. The symptoms worsen significantly to cause patients to feel unwell and may restrict the patient's ability to take part in daily activities as normal.

Remission

Remission can occur when there is a complete response to treatment and the blood and bone marrow cells return to what is considered to be normal. There are various levels of remission according to the number of detectable abnormal cells. Additionally, a relapse can occur in some patients when the leukemia cells reappear after a period of remission.

Other Types of Leukemia

In addition to chronic myeloid leukemia, there are three other main types of leukemia. These include acute myeloid

leukemia, acute lymphocytic leukemia, and chronic lymphocytic leukemia.

Reviewed by Susha Cheriyaedath, MSc

References

- <http://www.cancer.org/cancer/leukemia-chronicmyeloidcml/detailedguide/leukemia-chronic-myeloid-myelogenous-what-is-c-m-l>
- <http://www.cancerresearchuk.org/about-cancer/type/cml/treatment/staging-for-chronic-myeloid-leukaemia>
- <http://www.macmillan.org.uk/cancerinformation/cancertypes/leukaemiachronicmyeloid/symptomsdiagnosis/phases.aspx>
- <http://www.cancer.org/cancer/leukemia-chronicmyeloidcml/detailedguide/leukemia-chronic-myeloid-myelogenous-treating-treating-by-phase>

Further Reading

- [Chronic Myeloid Leukemia Treatment](#)
- [Chronic Myeloid Leukemia Pathophysiology](#)

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