

- ALT 461 U/l
- Alk. Phosphatase 2751 U/l

What is the Differential Diagnosis?

- ITP?
- DIC?
- Excessive peripheral platelet destruction (Infection? /Drugs?)
- Hematological malignancy?
- Bone marrow hypoplasia (Disease related? /Drug related?)

He was advised Bone marrow examination

Blood CP (performed with bone marrow examination)

- Hb 5.4 g/dl
- TLC 18.6 x10⁹/l
- PLTS 9000 x10⁹/l
- MCV 82 fl
- MCH 26 pg
- MCHC 32 g/dl

Peripheral film

- Mild Microcytic Hypochromic picture
- Neutrophils 22%
- Lymphocytes 18%
- Blast cells 60%

Bone Marrow Findings:

- Hypercellular smear
- Erythropoiesis Hypoplastic
- Myelopoiesis Hypoplastic
- Megakaryopoiesis Hypoplastic
- Blast cells 97%
- Blasts were medium sized cells with low N/C ratio, deeply basophilic and vacuolated cytoplasm
- PAS Stain: Negative
- Sudan Black Stain: Negative

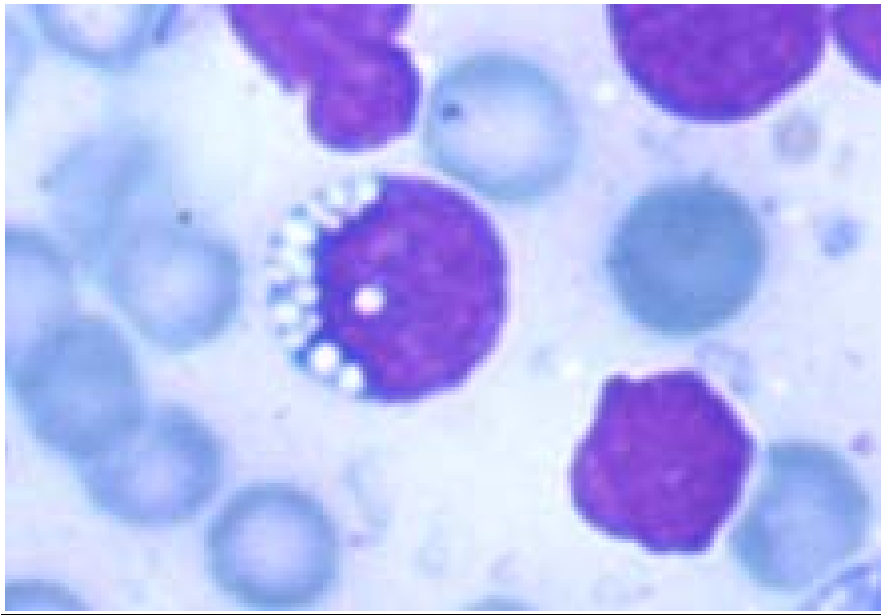


Figure 1: Blast cell seen in peripheral blood smear

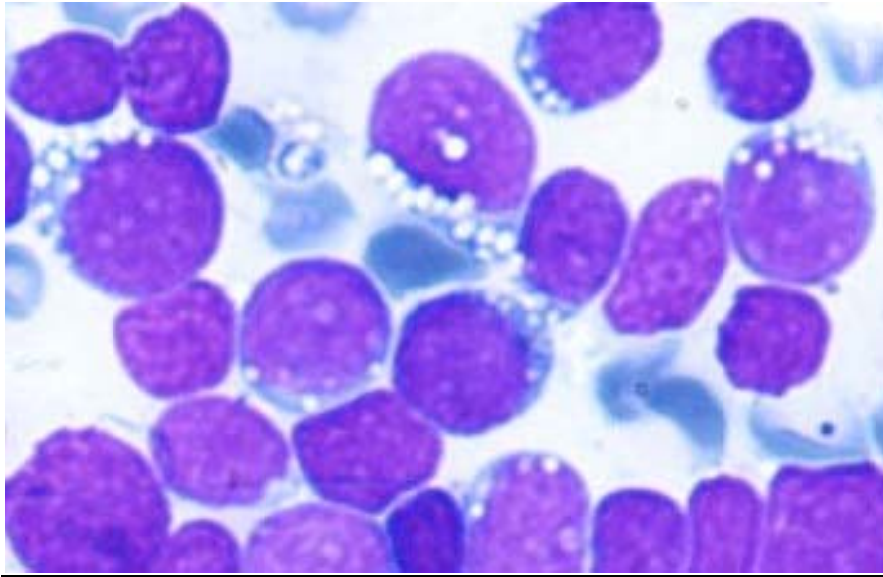


Figure 2: Blast cells seen in bone marrow smear

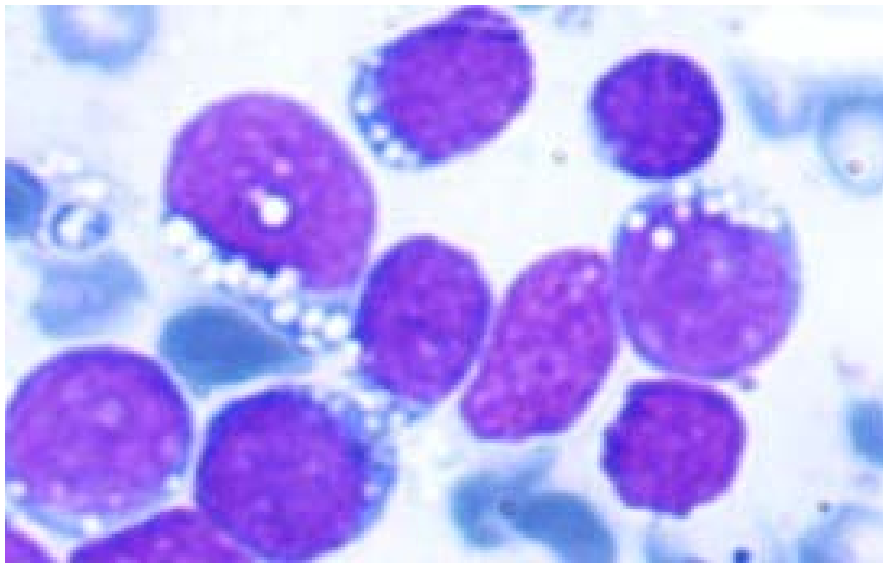


Figure 3: Blast cells seen in bone marrow smear

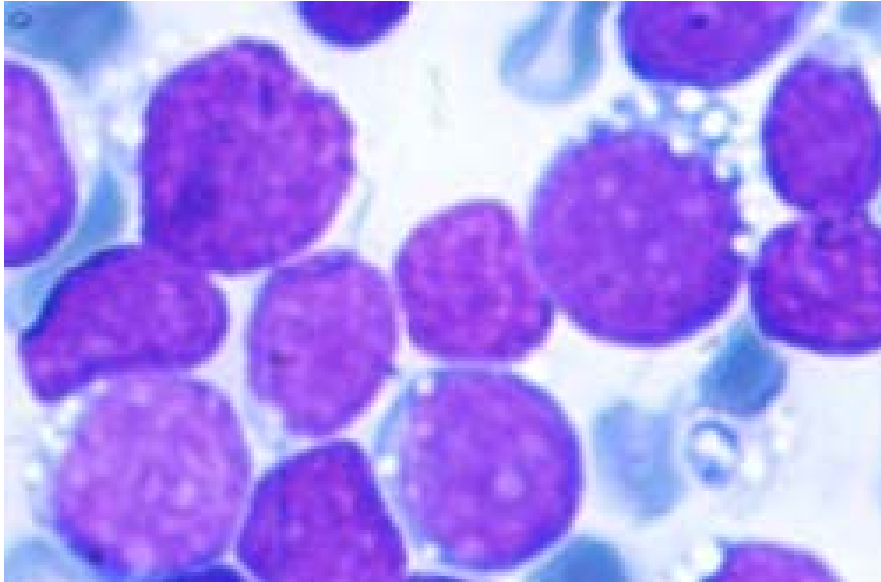


Figure 4: Blast cells in bone marrow smear

Diagnosis

Acute Lymphoblastic Leukemia (FAB Type ALL- L3)

Hematological Manifestations of HIV

- Human immune deficiency virus (HIV) causes the acquired immune deficiency syndrome (AIDS) which is either characterized by the presence of a particular opportunistic infection or CD4+ counts less than 200/ul or a combination of both.
- Hematological manifestations of HIV infection are common, diverse and may cause symptoms that may be life-threatening.
- The hematological abnormalities include immune and non immune mediated cytopenias and coagulopathies. These are multifactorial in etiology, and occur as a result of quantitative and qualitative marrow defects; immunological disturbance and effects of opportunistic infection, malignancy or HIV itself
- Anemia is secondary to:
 - impaired erythropoiesis,
 - drug therapy
 - reticuloendothelial iron block,
 - intercurrent infection, or
 - marrow infiltration with lymphomas or
 - hemophagocytosis.
- Thrombocytopenia may be
 - immune in etiology, or
 - related to drugs, splenomegaly or opportunistic infections.
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- Neutropenia is seen in all disease stages, but is most severe in patients with advanced disease.
- Bone marrow examination in HIV infected patients is usually performed to evaluate peripheral cytopenias or when systemic infections or malignancies are suspected and these bone marrow abnormalities may be seen in all marrow cellular elements, as well as in the marrow matrix itself.
- Bone marrow changes include varying degrees of dysplasia in one or more cell lines, which in some patients may mimic a myelodysplastic syndrome.

- Reactive changes can also be seen which include:
 - Increased lymphocytes
 - Increased plasma cells
 - Increased macrophages
 - Hemophagocytosis
- Opportunistic infections are also very common in AIDS and these include
 - Mycobacterium tuberculosis
 - Atypical mycobacterium, viral infections
 - Fungal infections
 - Parasitic infections.
- In many patients the bone marrow stroma exhibits an increased amount of reticular fibers.
- HIV patients also have increased incidence of certain tumors. In fact 30% to 40% will HIV infection is associated with an increased risk of non-Hodgkin malignant lymphoma
- **Histologically, the majority of systemic AIDS-NHL fall into one of three main categories:**
 - (1) High-grade, small noncleaved cell (Burkitt's and Burkitt's-like) lymphomas
 - (2) High-grade, large cell immunoblastic lymphomas
 - (3) Intermediate grade, large noncleaved cell lymphomas
- Acute lymphoid and myeloid leukemia and myelomatosis have also been described in patients with advanced disease.
- Among acute lymphoblastic leukemia (ALL) most frequent subtype belongs to the FAB L3 subtype (Burkitt's lymphoma)

- Burkitt's lymphoma is a highly aggressive non-Hodgkin lymphoma, composed of a monomorphic population of medium-sized B cells with a high proliferation rate and a consistent *MYC* translocation.
- In addition to translocations of genetic material, Burkitt's lymphoma is also associated with oncogenic viruses—the Epstein-Barr virus (EBV)
- Burkitt's lymphoma was first described in 1957 by Denis Parsons Burkitt, an Irish surgeon.

Currently Burkitt's lymphoma can be divided into three clinical variants:

1. Endemic
2. Sporadic
3. Immunodeficiency associated.

Endemic variant:

- It occurs in equatorial Africa.
- It is the most common malignancy in children in this era.
- The disease characteristically involves the jaw or other facial bones, distal ileum, cecum, ovaries, kidney or the breast.

Sporadic Type:

- Is also known non African type
- The tumor cells are similar to Burkitt's lymphoma.
- Jaw is less commonly involved.
- ilieo-cecal region is the common site of involvement.

Immunodeficiency-associated:

- BL accounts for 30-40% of non-Hodgkins lymphomas diagnosed in HIV infected individuals.
- Is usually associated with HIV infection or in post transplant patients taking immunosuppressive drugs.
- Burkitts lymphoma can be the initial manifestation of AIDS.

Morphologically it is almost impossible to differentiate these three clinical variants.

In patients with AIDS, the factors that affect the prognosis include:

- The CD4 lymphocyte count
- Presence of opportunistic infections
- Involvement of the bone marrow;
- spread of the lymphoma beyond the lymph nodes
- Age and the patient's overall strength.
- A history of opportunistic infections, a CD4 count below 200 and age above 35, indicate a poor prognosis.
- The average length of survival of HIV-positive patients with Burkitt's lymphoma is six months.
- HIV infection affects the treatment of Burkitt's lymphoma in AIDS patients, causing it to be less successful. As (AIDS)-related lymphomas are all aggressive lymphomas their treatment includes consideration of several problems.
- In addition, the immunodeficiency of AIDS and the leukopenia that is commonly seen with HIV infection makes the use of immunosuppressive chemotherapy difficult.
- Pts with Burkitt's lymphoma and HIV infection are thus treated with intensive or conservative chemotherapy according to the underlying HIV prognostic factors.

Bibliography

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