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The spectrum of bone marrow biopsy findings at a tertiary care Centre in Lahore: a retrospective analysis

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ABSTRACT

Background and Objective: Bone marrow examinations are typically safe procedures. Even though complications are uncommon, they can occur and may include significant bleeding in individuals with low platelet counts and infections, usually at the skin puncture site, particularly in immunocompromised patients. The conditions examined include bone disorders, as well as both hematologic and non-hematologic malignancies in the bone marrow.

Methods: This study analysed the retrospective data from Department of Pathology, Allama Iqbal Medical College/Jinnah Hospital, Lahore, including 373 patients who underwent bone marrow trephine biopsy between January 2023 and June 2024. Patient records were reviewed for demographic and diagnostic data. Statistical analysis was performed using the chi-square test, with $p < 0.05$ considered significant.

Results: Of the 373 patients, 206 (55.2%) were male and 167 (44.8%) were female, yielding a male-to-female ratio of 1.2:1. The most common age group was 21-30 years, comprising 68 cases.

Bone marrow aspiration was most frequently performed for suspected acute leukemia, followed by hepatosplenomegaly. Pancytopenia was observed in 59 cases (15.8%), while immune thrombocytopenia was noted in 3 cases. Normal trilineage hematopoiesis was reported in 65 cases. Aplastic anemia and hypocellular marrow were identified in 12 (3.2%) and 29 (7.7%) cases, respectively.

Acute leukemia was diagnosed in 77 cases (21%), with acute myeloid leukemia (AML) accounting for 21 cases (5.6%). A statistically significant association was found between age, gender, and AML, with a higher frequency in older male patients ($p = 0.04$). Multiple myeloma and other plasma cell disorders were diagnosed in 3 cases (0.8%), while myelofibrosis was identified in another 3 cases (0.8%). Hemophagocytic lymphohistiocytosis, myelodysplastic syndrome, and lymphoma were seen in 3, 11, and 8 cases, respectively.

Conclusion: Acute leukemia, particularly AML, was the most frequent diagnosis on bone marrow aspiration, followed by hepatosplenomegaly and pancytopenia. Significant association of AML with older male patients underscores the need for early evaluation in this group. Bone marrow examination remains a valuable diagnostic tool for diverse hematological disorders in our setting.

Keywords: Bone marrow, trephine biopsy, Leukemia, aplastic anemia, myelodysplastic syndrome.

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