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STUDY TO KNOW THE CLINICO-HEMATOLOGICAL FEATURES OF ACUTE MYELOID LEUKEMIA AND ITS FREQUENCY

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Abstract:
Objective: *To evaluate the frequency and clinical hematological features of AML.*
Study design: *3-year prospective cross-sectional observation study.*
Place and Duration: *In the Medicine Unit II of Services Hospital Lahore in Collaboration with haematology department for three years duration from March 2016 to March 2019.*
Methodology: *The AML newly diagnosed in all age groups and in both sexes were selected. Exclusion criteria, already diagnosed patients, were on radiotherapy or chemotherapy of AML. A detailed history including the presentation age of the disease and general and physical examination was obtained. History of exposure to drugs, chemicals and work history was recorded. Laboratory analysis included complete blood count and bone marrow examination.*
Results: *The incidence of ALL in 82 patients with acute leukemia was 47 (57.3%) and AML was 35 (42.7%). Of the 35 patients with AML, 21 (60%) were male and 7 (40%) were female. Of these 35 patients, 24 (68.6%) were adults (> 15 years) and 11 (31.4%) were children (<15 years). Regarding subtypes of AML, M3 was more common than all of them and the frequency was estimated to be 13 (37%), M2 (10 (29%)), M1 (20%), M4 (3), respectively. (8%). and M6 was 2 (6%). The most usual complaints were bleeding, fever and pallor. The constitutional findings were splenomegaly, hepatomegaly, lymphadenopathy, hypertrophy of the gums, petechiae and contusions. Soft tissue infiltration by leukemic cells was common in AML-M3 and M1.*
Conclusion: *Acute myeloid leukemia is more common in adults with superiority in men. Clinical manifestations vary in different subtypes.*
Key words: *Leukemia, AML, frequency, Subtypes of AML, clinical features.*

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INTRODUCTION:

Acute myeloid leukemia is a clonal hematopoietic disease obtainable from a specific progenitor cell or hematopoietic stem cell[1]. AML is defined by loss of normal hematopoiesis and predominance of immature forms. Multiple or single hematopoietic lines may include a leukemic clone[2]. The percentage of bursts in the bone marrow and peripheral blood is 20%; a lower ratio may be acceptable in translocations defining AML[3]. (AML) Acute myeloid leukemias are rare but greatly malignant neoplasms accountable for a large amount of cancer-related deaths. In any age, AML may occur in patients but in over-all, the proportion and incidence of acute myeloid leukemia, which are both myeloid, increase with age[4-5]. The incidence of AML increases during adulthood, during which 70-80% of acute leukemia is AML[6-7]. AML affects all age groups. In men; AML is more common as compared to females. In elderly patients; variation is more pronounced. The AML signs and symptoms of are due to replacement of normal blood cells with leukemia cells and suppression of normal hemopoiesis, resulting in anemia, thrombocytopenia and leukopenia[8]. Some comprehensive symptoms include weakness, fever, loss of appetite or weight loss or infections. Spleen enlargement may be seen in AML[9]. Lymphadenopathy is rare in AML, unlike acute lymphoblastic leukemia. In 10% of AML cases; Skin is involved[10]. Some patients with AML may experience gums swelling due to leukemic cells leaking into the gingival tissue. Rarely, the leukemia first sign may be the solid leukemic mass formation or a tumor called a chloroma outside the bone marrow. Sometimes leukemia may be asymptomatic and may be diagnosed by chance during a routine blood test.

MATERIALS AND METHODS:

This, three years prospective cross-sectional observation study was held in the Medicine Unit II of Services Hospital Lahore in Collaboration with haematology department for three years duration from March 2016 to March 2019. AML cases of both sexes were included in the study. Patients who were previously diagnosed or on chemotherapy were excluded from the study. Eighty-five patients with acute lymphoblastic leukemia (ALL) and 35 with acute myeloid leukemia (AML) were diagnosed with acute leukemia. Special attention was paid to constitutional symptoms such as fever, shortness of breath and bleeding, and a relevant and detailed history including age, gender, occupation and duration of symptoms was achieved. Physical examination including splenomegaly, hepatomegaly, lymphadenopathy, purpuric or petechial eruptions and hyperplasia of the gums were performed. A complete blood count was performed on an automated hematology analyzer. Bone marrow examination, including aspiration and trephin biopsy, was performed from posterior iliac crest in all patients except those under 1 year of age who underwent tibial aspiration. Peripheral blood and bone marrow stains were stained with Giemsa and Sudan Black B. Trephin biopsy and clot were processed and stained with hematoxylin and eosin. The diagnosis of AML was confirmed by the morphology of bone marrow aspirate and the positivity of granules with Sudan Black B, a special cytochemical staining. The FAB classification of AML was applied to the sub-classification of AML.

RESULTS:

Details of the results are given in tables 1, 2, 3 and 4. A total of 82 patients with acute leukemia were observed in the study. 47 (57.3%) were diagnosed with ALL and 35 (42.7%) with AML. Of 35 patients, 21 (60%) were male, 7 (40%) were female, and the female ratio was 3: 2. Among the AML subtypes, 13 (37.1%) patients had AML-M3 and 10 (28.5%) had M2, the most common subtype. Less common subtypes were M1: 7 (20%), M4: 3 (8%), and M6: 2 (6%) (Table 1).

Table 1: Frequency of sub-types of AML

AML	M_1	M_2	M_3	M_4	M_6	Total
=n	7	10	13	3	2	35
%age	20	29	37	8	6	100

All patients were included in all age groups with a range of 1 - 75 years. Of these, 9 (26%) were younger than 15 years, 22 (63%) were adults, and 4 (11%) were older. Therefore, the maximum number of patients was observed in the adult age group (Table 2).

Table 2: Age distribution of subjects (n=35)

Age (Range)	=n	% age
0-15 yrs (Child)	09	26
16-60 yrs (Adult)	22	63
61-80 yrs (Old)	04	11

The most common presenting symptoms were fatigue (91%), fever (86%) and bleeding at different sites (40%). Less common symptoms were general weakness (37%), weight loss (29%), productive cough (11%), and anorexia and vomiting (4%) (Table 3).

Table 3: Frequency of clinical symptoms

Symptoms	=n	%age
Easy fatigue	32	91
Fever	30	86
Bleeding	14	40
Generalized weakness	13	37
Weight loss	10	29
Productive cough	4	11
Anorexia/ vomiting	4	11

DISCUSSION:

In this study, male superiority was observed in patients with AML and was consistent with other studies[11]. In this study, while the ratio of men and women was 3: 2, Kumar et al. It was 2: 1. AML is mostly a malignant disease of adults and its overall incidence increases with age[12]. This study confirmed this because the maximum number of patients was in the adult age group (63%). These results are consistent with other studies and a study at the Bone Marrow Transplant Center of the Armed Forces[13]. The average age of AML is considerably higher in the West than in Pakistan. In a study conducted in 26 UK hospitals, the mean age was 67 years and in Spain found 61 years and 51 and 52 years in Japan and Australia, respectively. This higher average age in the West may be due to a higher average age in these countries than in the East. A general decrease in hematopoiesis due to medullary proliferation of abnormal burst cells leads to clinical signs and symptoms of anemia, thrombocytopenia and leukopenia, as well as pallor, fatigue, dyspnea, bleeding and fever.[14] Anemia was the most common symptom (100%) followed by thrombocytopenia (86%) and leukopenia (11.4%), respectively. Other studies showed similar characteristics. Ghosh et al. 2003 followed pallor and fatigue in the majority of patients, followed by frequent bleeding in AML-M3 and AML-M516. In our study, hemorrhagic diathesis was observed more frequently in M1 (43%), M4 (33%), M2 (30%) and M3 (15%) follow-up. In this study, splenomegaly (71%) and hepatomegaly (57%) were observed. In the study of Naghmi et al., Splenomegaly and hepatomegaly were 45% and 48%, and Fozia et al. Reported 27% and 40%, respectively. In a study by Kumar et al, 42% of patients had splenomegaly. In this study, 29% of patients had lymphadenopathy similar to Fozia et al. (20%) and Naghmi et al (38%) [15]. In this study, 17% of patients had gum hyperplasia. In this study, tissue infiltration was more common in M6, M1 and M4 and was comparable to other studies, AML-M4, M5, M110 and AML-M5, M4, M18. In this study, two patients with AML-M3 presented extramedullary leukemia. One presented with an orbital mass and the other with lumbar spine collapse. Hepatosplenomegaly, lymphadenopathy and gingival hyperplasia were the most common findings in AML-M6, M1, M4 and M2 to find the frequency of tissue infiltration in AML subtypes.

CONCLUSION:

There is a reported geographical variation in the distribution of extramedullary leukemia. Therefore, we can conclude that AML is a malignant neoplasm of adulthood, is more common in men, and has different subtypes with variable symptoms relative to these subtypes.

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