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Haematological and Cytomorphological Study of Acute Lymphoblastic Leukemia (ALL)

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Objective: Acute lymphoblastic leukaemia (ALL) has long been recognized to be clinically and morphologically heterogeneous. We tried to study, analyze, and interpret the relationships between age, sex, clinical manifestations, FAB classification and hematological investigations.

Methods: Over a period of 6 months, sixty-four, newly diagnosed (Sudan Black B–negative), cases had been included in this study, from different centers. Clinical study was conducted concentrating on the presence of fever, pallor, bleeding tendency, lymph node enlargement, spleen and liver enlargement, neurological and testicular manifestations, and the presence of mediastinal mass on chest x-rays. Hematological investigations included haemoglobin concentration, initial total white cell count, and platelets count. Bone marrow smears were stained with MGG stain and the FAB classification and the FAB scoring system had been used.

Results: The study showed that children were 39 (61%) of total cases while adults were 25 (39%), with the highest age incidence between 0-5 years. Male: female ratio was 2:1. Age incidence in males was higher than that for females for all age groups. Lymph node enlargement and hepatomegaly were the most common clinical findings. The presence of mediastinal mass on chest x-ray was more in male than female sex (39.5% Vs 9.5%). L2- morphological subtype was more common in both children and adults 87.2% and 92% respectively) than L1 morphological subtype (12.8% and 8% respectively). No L3 type had been found in our study.

Conclusion: ALL is a disease of children mainly with higher incidence in males than females and, unlike the internationally reported cases where L1 type is more prevalent, L2 type is more prevalent in Iraqi cases.

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Acute lymphoblastic leukaemia (ALL) has been recognized to be clinically and morphologically heterogeneous[1]. Morphologically it has been classified according to the FAB (French, American and British) criteria into three subtypes, L1, L2 and L3[2-4]. This system of classification, which is still valid, had been proven to be clinically reproducible[4-,6]. In L1 subtype the cells are small, homogenous, the cytoplasm is little, the nuclei–cytoplasmic (N/C) ratio is high with inconspicuous nucleoli[7]. It is more common in children (about 74%) than in adults (about 66%)[4,7]. In L2 subtype, the cells are heterogeneous, larger in size with ample amount of cytoplasm and, thus low N/C ratio, and are usually associated with nuclear clefting, indentation and folding with 1-2 conspicuous nucleoli.

It is less prevalent than L1 subtype but is more common in adults. The L3 cells are large with finely stippled nuclear chromatin and characteristically a deeply stained, basophilic and usually vacuolated cytoplasm, (Burkitt, s type). It is the least common subtype and there are no significant age differences in its incidence[1,3]. The current study is planned to verify the incidence of the three ALL subtypes and their relation to age, sex and clinical and haematological presentations in our society.

METHODS

Sixty-four newly diagnosed acute lymphoblastic leukaemic patients, regardless of the age had been included in this study.

Full history and physical examination have been done, concentrating on the presence of the following: fever, pallor, bleeding tendency, lymphadenopathy, splenic or liver enlargement, neurological and testicular manifestation in males and any radiological evidence for the presence of mediastinal masses.

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