



**INCIDENCE OF ACUTE LYMPHOBLASTIC LEUKEMIA, EXPERIENCE AT KING
HUSSEIN MEDICAL CENTER (KHMC). JORDAN**

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ABSTRACT

Aim of the study: To evaluate the incidence of newly diagnosed cases of acute lymphoblastic leukemia, and to examine the relation of ALL incidences with patient's AN. **Methods:** This is a retrograde statistical study, all data was retrieved from the lab records at the Hematopathology Department / Princess Iman Center for Research and Laboratory Sciences/KHMC over a 6 years period (2008-2014). For each patient's complete blood count, bone marrow aspirate, flowcytometry, and cytogenetic study were performed. **Results:** Total number of newly diagnosed cases is 94 (including both adults and children), of which 82 cases are B-ALL, 11 cases are T-ALL and 1 case undifferentiated ALL. 92% of cases are in the age group of 1-13 years with the peak in the age group of 2-3 years. Of the 94 cases, males are 54 and females are 40 with an M: F ratio of 1.4:1. 53 patients show no cytogenetic abnormalities; 34 males and 19 females while 41 patients show cytogenetic abnormalities; 20 males and 21 females. **Conclusion:** incidence of acute lymphoblastic leukemia appeared comparable with global published data. Morphological and cytogenetic findings in association with age and gender revealed that B-ALL more frequently than T-ALL. The peak incidence was in male children 2-3 years age which is keeping with global statistics.

KEYWORDS: leukemia, incidence, bone marrow aspirate.

INTRODUCTION

Acute lymphoblastic leukemia is a malignant tumor of lymphoid progenitor cells in blood and bone marrow. 80 % of acute lymphoblastic leukemia occurs in children.^[1] Worldwide leukemia is the most frequent childhood malignancy and the frequency of acute lymphoblastic leukemia in pediatric leukemia patients is 76%.^[2] ALL affects children at any age with increased incidence rate between two and five years of age, and the boys slightly more frequently affected.^[3] Another peak of acute lymphoblastic leukemia found in adults over 50 years old and represent 20% of all leukemia's among them.^[4] According prevalence of acute lymphoblastic leukemia in children a number of studies show that higher incidence of association with socioeconomic status, whereas in adults there is no association.^[5] Clinical features of ALL includes fever, fatigue, easy bleeding and infections as a result of that abnormal lymphocytes are not able to fight infection and replaced healthy white blood cells, red cells and platelets.^[6] In the time period before second world war the hematological tumors were incurable, but at this time are more curable due to discovery of medical agents that induce remission.^[7]

The aim of this study is to observe the incidence of ALL among the population at KHMC.

METHODS

Our study was approved by ethical committee at royal medical services. This is a retrospective statistical study, all data was retrieved from the lab records at the Hematopathology Department / Princess Iman Center for Research and Laboratory Sciences/KHMC in the time period from Jan/2008 till Dec/2014. A total of 94 patients were included in this study, 54 were males and 40 were females with a male/female ratio 1.4:1. From each patient two tube of blood were collected (EDTA tubes) for complete blood counts, blood film, and flow cytometry. For cytogenetic study two tubes (EDTA tubes) filled with 5 ml blood each were collected. Bone marrow aspirate was collected for morphological and immunophenotyping.

RESULTS

Total number of newly diagnosed cases is 94 (including both adults and children), of which 82 cases (87.3%) are B-ALL, 11 cases (11.7%) are T-ALL and 1 case (1%) undifferentiated ALL figure-1. 92% of cases are in the age group of 1-13 years with the peak in the age group of

2-3 years. Of the 94 cases, males are 54 (57.4%) and females are 40 (42.6%) with an M: F ratio of 1.4:1 figure-2. 41 (43.7%) patients show cytogenetic abnormalities; 20 males and 21 females figure-3, while 53 (56.3%) patients show no cytogenetic abnormalities; 34 males and 19 females figure-4.

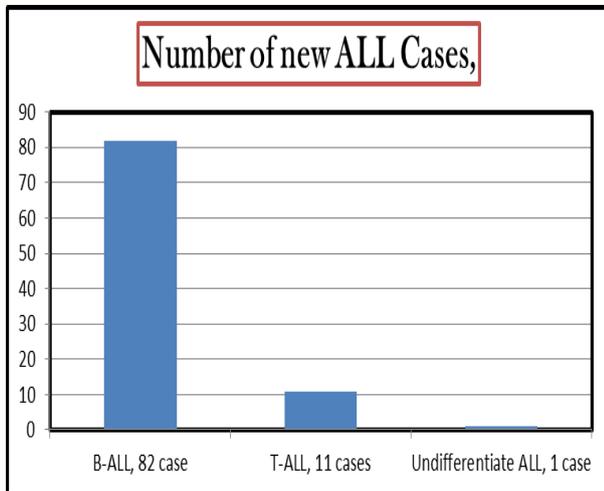


Figure 1.

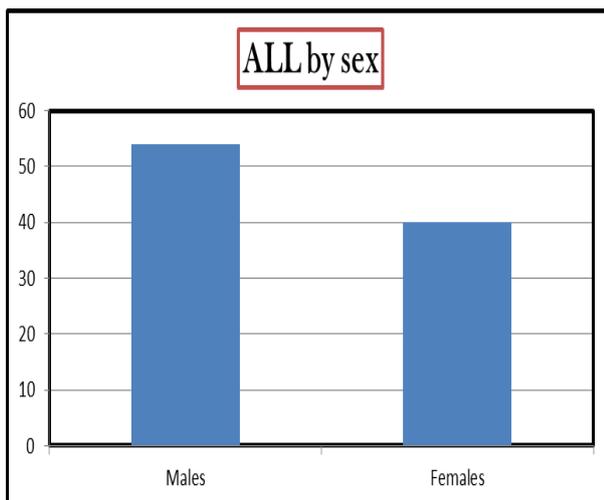


Figure 2.

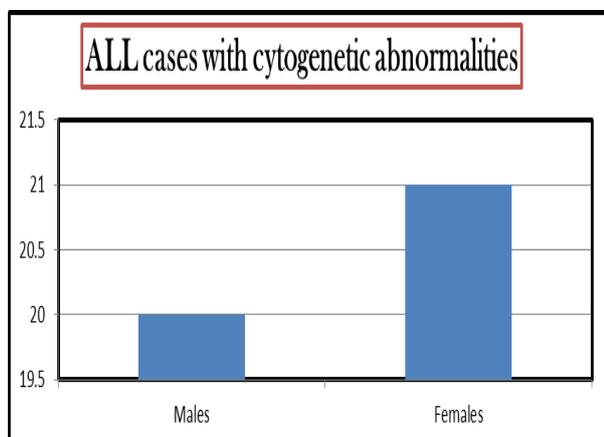


Figure 3.

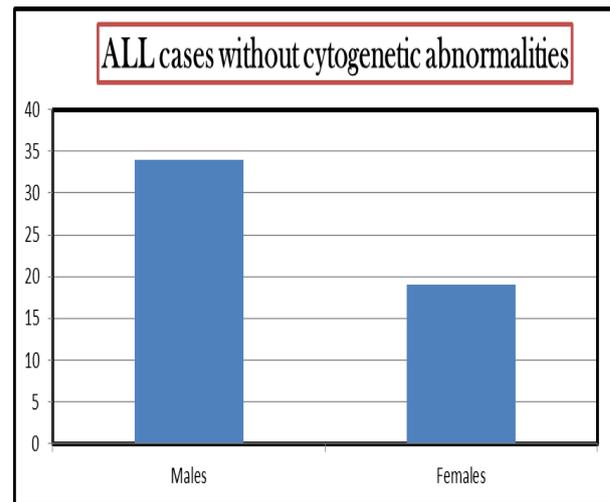


Figure 4.

DISCUSSION

The present study was conducted to evaluate the frequency of newly diagnosed acute lymphoblastic leukemia. Our results show that the incidence rate of acute lymphoblastic leukemia in children was 92%, and for adults was 8%. Ramandeep Singh Arora et al study conducted in India shows that the frequencies of acute lymphoblastic leukemia in children constitute 75-80%.^[8] The peak incidence was in patient's age from 2 to 3 years. In keeping with our results Hrusa O et al report that the incidence rate was increased in patient age group 1-4 years, the study conducted in Czech Republic.^[9] Md Jobayer Hossain et al report that the survival rate peaked in those child age 1-4 years was better than children older 4 years age.^[10] Our study shows that males were more frequently affected than females with male/female ratio 1.4/1. Rashed Bakr and OsamahTawfiq in study conducted in Saudi Arabia observed that males are slightly more affected with leukemia (55.4%) than females by (44.6%).^[11] We report that 87.3% of 94 ALL cases (n=82) were B-ALL, 11.7% were T-ALL (n=11) 1% (n=1) was undifferentiated ALL. Akbar Safaei et al reported incidence of B-ALL was 91.7% (154/168) and T-ALL was 8.3% (14/168) which is in keeping with our results.^[12] In our results we observed 56.3% (n=53) had no cytogenetic abnormalities (34-males, 19-females) and 43.7% (n=41) had cytogenetic abnormalities (20-male, 21-female). We reported that no significant differences between male and female regarding cytogenetic abnormalities. Study conducted in Pakistan by Muhammad Shariq et al shows 51.2% (n=65) ALL cases were with normal karyotype whereas 48.8% (n=62) had an abnormal karyotype.^[13]

CONCLUSION

Incidence of acute lymphoblastic leukemia appeared comparable with global published data. Morphological and cytogenetic findings in association with age and gender revealed that B-ALL more frequently than T-ALL. The peak incidence was in male children 2-3 years age which is keeping with global statistics.

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