



## Incidences of Acute Lymphoblastic Leukemia as per Age: A two year Study

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### Abstract

**Objective:** ALL is the most common cancer in children. Global incidence is about 3 per 100,000 populations, in which 3 out of 4 cases occurring under 6 years age. ALL accounts for 12% of all leukemia (but 80% in children). Much progress has been made in the treatment of acute lymphoblastic leukemia (ALL, which constitute 75–80% of childhood acute leukemia's with raised 5-year overall survival rate which reaches up to 90% in the high-income countries (HICs).

**Aims & Objectives:** To find out the age wise incidences of acute lymphoblastic leukemia.

**Material & Methods:** A two year study was conducted in the department of Pathology M.G.M. Medical College Indore. Patients were diagnosed on the basis of peripheral smear then further confirmation was done with the help of flow cytometry. The results were then evaluated for age wise incidences.

**Results:** We have observed that the incidences of acute lymphoblastic leukemia are common in children's with age less than 15 years.

**Conclusion:** Acute lymphoblastic leukemia is more common in childhood. It is also noted that the incidence of ALL is slightly higher in males compared to females

**Keywords:** Acute leukemia, childhood, flowcytometry.

### Introduction

Acute lymphocytic leukemia (ALL) is a rare malignant disorder that develops from abnormal lymphoid stem cells and results from the clonal proliferation of lymphoid precursors with arrested maturation<sup>[1]</sup>. Peak age of incidence occurs between the ages of 2-4 years, cases are rare in adulthood. A smaller peak occurs in people aged over 50 years.

Leukemia's (>95% of which are acute) constitute the most common childhood cancers diagnosed worldwide, and in India.<sup>[2,3]</sup>

The incidence of ALL peaks sharply among children 1–4 years of age, accounting for 50% of ALL patients, with a slow decline towards adolescence<sup>[4-6]</sup>. ALL comprises < 1% of adult cancers and approximately 20% of adult leukemias<sup>[7,8]</sup>

In general, the age-standardized incidence of ALL is highest in the Americas and Oceania and lowest in Asia and eastern Europe<sup>[8]</sup>.

The lowest rates of ALL are found in developing countries; however concerns are frequently raised related to statistics produced in these countries<sup>[9]</sup>. Although the prognosis for ALL is particularly

poor among adults, approximately 90% of childhood cases are cured<sup>[10]</sup>. This dramatic improvement in survival outcome has occurred over the last 2–3 decades and has been attributed to combination chemotherapy and cooperative clinical trials<sup>[11]</sup>.

**Aims & Objectives**

To find out the age wise incidences of acute lymphoblastic leukemia.

**Material & Methods**

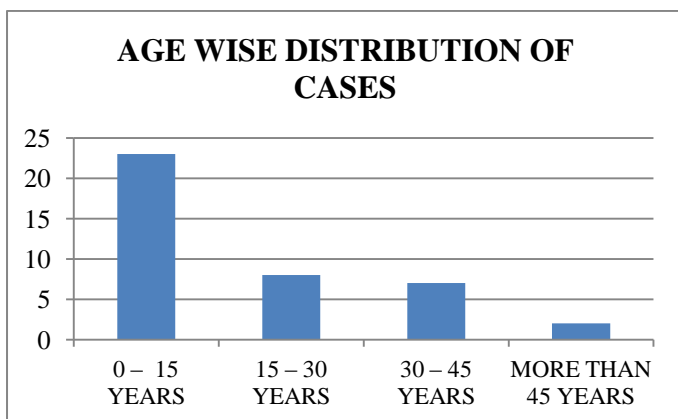
A two year study was conducted in the department of Pathology M.G.M. Medical College Indore. Patients were diagnosed on the basis of peripheral smear then further confirmation was done with the help of flow cytometry. The results were then evaluated for age wise incidences. We have included all the cases which were diagnosed as acute leukemia Or acute lymphoblastic leukemia on peripheral smear. A total of 40 cases were studied. Cases were categorized in B & T –ALL on the basis of flowcytometry.

**Results**

These acute leukemia cases were categorized on the basis of age.

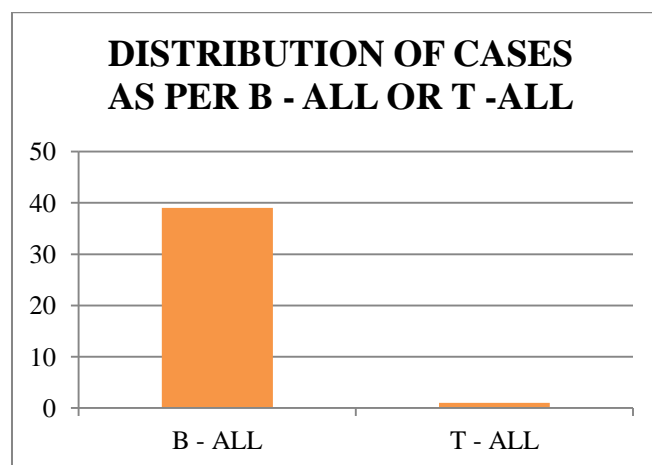
Age wise incidences of cases:

| AGE GROUPS         | NO. OF CASES |
|--------------------|--------------|
| 0 – 15 YEARS       | 23           |
| 15 – 30 YEARS      | 08           |
| 30 – 45 YEARS      | 07           |
| MORE THAN 45 YEARS | 02           |
| TOTAL CASES        | 40           |



**Distribution of cases on the basis of B – ALL & T –ALL**

| TYPE OF ALL | CASES |
|-------------|-------|
| B - ALL     | 39    |
| T - ALL     | 01    |



**Discussion**

In this study we determined the incidences of cases according to their age. We observed that maximum cases of acute lymphoblastic leukemia lies between 0 – 15 year of age followed by 15- 30 year of age groups. The maximum cases are of B –ALL type. Similar results were observed by Rayven Snodgrass et al in his study Incidence of acute lymphocytic leukemia in Calgary, Alberta, Canada: a retrospective cohort study done in 2018.

Fareed Haddad et al in 2014 also found that around 63% of their patients were children (104 out of 165 patients) with age less than fourteen years old. 114 patients were male while 51 patients were female with male to female ratio 2.2: 1 whereas Precursor-B- acute lymphoblastic leukemia represents eighty percent (132 patients) of cases which was almost similar to our study.

Safoorah Khalid, et al showed in his study that the age of the patients ranged from 3 to 76 years with an average of 22±20 years, the pediatrics patients were 18 (50%) of the cases.

In a study done by S et al, 260 cases were observed and found that 62 patients belonged to the pediatric age group while there were 198 adults. This differed from our study. This may be because of difference in sample size.

### Conclusion

Diagnosis of ALL is important because it is one of the most common pediatric cancers. Age wise evaluation is significant because the prognosis of pediatric ALL is better. If they are diagnosed at time they will be cured almost completely.

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