TABLE I: PERFORMANCE OF THE STUDY QUESTIONNAIRE AGAINST CONNERS' RATING SCALES

		Conners' rating scales positive	*negative*
*Parents' Questionnaire	+	28	16
	–	8	448
#Teachers' Questionnaire	+	10	5
	–	2	83

+: positive or –: negative for ADHD; Cohen's Kappa 0.67 and 0.77#*

To conclude, ADHD is an important behavior problem in adolescents. DSM-IV based questionnaire, which is simple to administer and score, can be a useful screening tool in resource-limited settings.

Contributors: MJ and SS: conceptualized and designed the study. SS: data collection: SS and RJ: data analysis and prepared the initial draft; MJ and RJ: revised the manuscript critically for important intellectual contents. The final version was approved by all authors.
Funding: None; *Competing interests*: None stated.

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Chimeric Fusion Karyotypes in Childhood B-cell Acute Lymphoblastic Leukemia

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Cytogenetics study using combination of conventional cytogenetics and fluorescent insitu hybridization was carried out in 171 pediatric acute lymphoblastic leukemia patients subgrouped to B-ALL (*n*=126) and T-ALL (*n*=45) by bone marrow morphology and immunophenotype. The chromosomal aberration frequency in B-ALL and T-ALL was 79% and 71%, respectively. TEL/AML1 translocation was detected in 28% of patients.

Keywords: *Complex chromosomal change, FISH, Giemsa banded karyotype, Translocations*.

The most common type of childhood leukemia is acute lymphoblastic leukemia (ALL), which has a B-cell precursor phenotype. The main subtypes of ALL involve multiple genetic alterations including point mutations and deletions, and are also characterized by gross chromosomal changes such as translocations, which are likely to cause illegitimate recombination or juxtaposition of normally separated genes. In leukemias, an in-frame fusion gene is often created, generating a hybrid protein with altered properties. More than 200 genes are known to be involved in translocations in leukemias [1]. Multiplex reverse transcriptase polymerase-chain-reaction (RT-PCR)

based study for few chimeric transcripts in both adult and pediatric ALL from Northern India has recently been reported [2].

We carried this study using conventional cytogogenetics (GTG-banding) and fluorescence-in-situ hybridization (FISH) in 171 children aged between 2 years to 15.5 years diagnosed as ALL over 4 years. Of these 126 had B-ALL and 45 patients had T-ALL (B:T ALL ratio of 2.9:1). These patients had standard karyotype and FISH-analysis for common translocations e.g BCR/ABL (9;22), TEL/AML1 (12;21), E2A/PBX (1;19), MLL/AF4 (4;11). Rare translocations through FISH-based analysis were investigated whenever required. Karyotype/ FISH analysis were successful in 114 (93%) of B-ALL (90 abnormal and 24 normal karyotypes). In 45 children with T-ALL, chromosomal analysis revealed normal karyotype in 12 patients by Giemsa banded karyotype/FISH, 30 patients had karyotypic abnormalities, and in 3 patients we failed to get chromosome preparations. Chimeric fusion karyotype of B-ALL is presented in ***Table* I**.

In our series of 126 children with B-ALL, we did not find any patient with MLL/AF4 (4;11) translocation probably because we did not have any infantile ALL, who usually carry this mutation. Proportion of TEL/ AML1 translocation was higher in our patients compared to 16% in the series reported by Bhatia, *et al.* [2] and 0-9 yrs by other researchers from India [3-6]. Older series used Giemsa banded karyotype for investigation of TEL/AML which could miss the diagnosis due to smaller size of the translocated area. However, even when more sensitive RT-PCR was used, some series reported low prevalence of this transcript. Most of these studies did not combine Giemsa banded karyotype, FISH and RT-PCR to increase their yield of TEL-AML1 mutation. The combination of cytogenetics and RT-PCR is essential to increase the detection rate of fusion genes. Out of 25 TEL/AML1 translocations, 9 (36%) had hyperdiploidy as additional abnormality. Hyperdiploidy was also seen in BCR/ABL positive patients. Translocation (12;20) with hyperdiploidy was picked up in one patient and another had t(8;14) with duplication of chromosome number .

TABLE I CHIMERIC FUSION KARYOTYPES IN B– ALL (N=31)

Translocations	*N (%)*
TEL/AML1t(12;21)	25 (27.8)
BCR/ABL t(9;22)	2 (2.2)
E2A/PBX t(1;19)	2 (2.2)
c-myc/IgH t(8;14)	1 (1.1)
t (12;20)	1 (1.1)
Total	31 (31.4)

Though there could be regional and population-based differences in TEL/AML1 and other transcripts in pediatric ALL patients. Some of the differences could be related to the selected technique to detect these; multiple techniques should be used for picking up additional genetic abnormalities.

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