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	○ **Master** ● **PhD**
Thesis Title	**Real time reverse transcriptase polymerase chain reaction as diagnostic molecular tool in screening of common fusion genes in sample of Iraqi children with acute lymphoblastic leukemia**
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Abstract

Pediatric acute lymphoblastic leukemia is a heterogeneous disease with various genetic subtypes that respond differently to treatment. Many chromosomal aberrations with resultant fusion genes are known to be associated with the disease.
Objectives:
To study the expression of common fusion genes in pediatric acute lymphoblastic leukemia using a quantitative real time polymerase chain reaction technique, correlate results with different clinical and laboratory findings and evaluate these expressions after initial treatment.
Subjects, materials and methods:
A case-control prospective study was conducted using qPCR technique to study the expression of *TEL-AML1, E2A-PBX1, BCR-ABL1, MLL-AF4* and *SIL-TAL1* fusion genes in bone marrow aspirates of 48 untreated acute lymphoblastic leukemia pediatric patients and 46 control subjects, were recruited at the Children Welfare teaching hospital / Medical City directorate for the period from 1st of July 2013 to 31st of June 2014. Post-induction transcripts' evaluation for 12 ALL patients was done by comparative quantification method using *GAPDH* as a reference gene.
Results:
Out of 48 acute lymphoblastic leukemia patients, 21 were males and 27 were females with a male to female ratio of 0.78:1. Age ranged from (2 months to 13 years) with 26 patients aged between 1-5 years whereas the median age was 5 years. The mean age was 5.9 years $\pm$ standard error of 0.51 years. Molecular screening demonstrated detection of *TEL-AML1, E2A-PBX1* and *BCR-ABL1* p190 transcripts in 20.8%, 16.7% and 2.1% of patients, respectively. *BCR-ABL1* p210, *MLL-AF4* and *SIL-TAL1* transcripts were not expressed. One

patient expressed both *TEL-AML1* and *E2A-PBX1* transcripts. Post induction transcripts were detected in 2 out of 12 patients.

Conclusions:

Real time PCR technique is an applicable molecular method in classifying and predicting prognosis in pediatric ALL. The molecular classification of Iraqi children with ALL is mostly similar to reports worldwide making *TEL-AML1* fusion gene the most prevalent type.