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Thesis Title	**PARVOVIRUS B19 ASSOCIATED APLASTIC CRISISIN CHILDREN WITH ACUTE LYMPHOBLASTIC LEUKEMIA**			
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Abstract	***P***arvovirus B19 is a small single-stranded DNA virus and the only member of the species *Parvoviridae*known to infect humans. The virus exhibits a strong tropism for erythroid progenitor cells using the erythrocyte globoside P antigen as a surface viral receptor. In the setting of shortened red blood cell survival, mild pancytopenia characterized by transient and spontaneous recovery in healthy subjects. Nevertheless; severe aplastic anemia associated with parvovirus B19 infection may precede or be associated with acute lymphoblastic leukemia (ALL) that has been described in a number of reports. The attenuated immune response in these patients may obscure the serologic and clinical manifestations of infection. Infection may mimic a leukemic relapse or therapy-induced cytopenia, and may lead to hospital admission, frequent blood sampling, renewed bone marrow aspirates, multiple transfusions of red blood cells (RBCs) or platelets, and cessation of maintenance chemotherapy for			

	up to 3 weeks in children with ALL. ***Materials & Methods:*** A cross sectional study involved forty five patients with ALL were currently attending department of oncology in Children'sWelfare Teaching Hospital in medical city of Baghdad between December 2012 and April 2013.Twenty one patient who newly diagnosed with ALL and 24 who underwent chemotherapy. Their age ranged from 8 months to 15 years with mean age ±SD equal to 6.54±4.2 years. Compared to forty five of apparently healthy children who were already under pre operative screening tests. They included in this study as a control group, age and sex were matched. II *The practical part of this study performs the followings:* 1- Serological detection of parvovirus B19 specific antibodies (IgM and lgG) in patients' serum using enzyme linked immunosorbant assay (ELISA). 2- Molecular detection of parvovirus B19 –DNA using Real-time PCR for viral load measurement. 3- Other tests: include hematological tests which were done routinely for patient assessment. ***Results*** B19-IgM was detected in 7 out of 45 patients tested (15.6%) compared to 2 out of 45 (4.4%) apparently healthy children whom belong to control group. No Statistical significant difference was observed (P-value >0.05) and the risk of parvovirusB19 infection in children with ALL was 3.96 times (odds ratio). B19-IgG was detected in 18 out of 45 patients (40%)

	compared to 6 out of 45 (13.3%) of apparently healthy children. Statistical significant difference was clearly noticed (P-value < 0.05). Four out of 21(19.05%) children whom newly diagnosed with ALL had acute parvovirus B19 infection compared to 3 out of 24 (12.5%) children on maintenance chemotherapy gave positive parvovirusB19-IgM. Parvovirus B19 IgG antibodies were detected in 8 out of 21(38.1%) 0f newly diagnosed children with ALL compared to 10 out of 24 (41.7%) children on maintenance chemotherapy. The correlation between parvovirus B19 IgG- and IgM-Antibodies among study groups shows that 4 out of 45 (8.9%) was detected to be positive in children III with ALL group compared to control group which revealed no detectable combined B19 IgG/IgM antibodies. Parvovirus B19 –DNA was detected in 6 out of 45(13.3%) compared to none detectable DNA signals among the control group. All cases with positive parvovirus B19 nucleic acid signals were underwent maintenance chemotherapy which were represented in 6 out of 24(25%), statistical significant difference were noticed among study cases. The viral load was ranged from ($65x10^3$-10^6 copies/ml) with mean of ($36x10^4$ copies/ml). In newly diagnosed ALL cases, only one case (4.7%) had IgM/IgG antibodies and 3 out of 21 cases (14.3%) gave IgM positive antibodies. While children on maintenance chemotherapy ,a combined IgM/IgG were detected in 3 cases out

	of 24(12.5%), 3 cases with both IgG and B19 DNA signal detection and only two (8.3%) children on maintenance chemotherapy gave positive B19 DNA signal (P-value < 0.05). The effect of B19 infection on blood parameters during recent, prior and absent infection for studied groups showed that the mean values of hemoglobin were 8.5±1.8, 6.5±2.**5** and 8.5±2(g/dl) in children with ALL who were proved to have positive IgG, IgM and B19 DNA respectively compared to12.8±0.7 among control group (P<0.05). Other blood parameters showed a decreased RBC count which were estimated in cases with positive anti B19 IgG was 3±0.7 anti B19 IgM was 2.5±0.9whereas, mean RBC count was2.9±0.6 in association with B19 cases DNA detected signals (P<0.05). Furthermore, acute B19-infection associated with a decreased WBC count among ALL cases with (p<0.05), a remarkable decrease in platelets count was appeared in cases with acute B19 infection (P<0.05). IV Regarding clinical symptoms and signs associated with B19 infection, 2 out of 7 (28.6%) cases with peticheal rash had acute infection with B19 virus, 3 out of 7 (42.9%) ALL cases with acute B19 infection complained from Arthralgia and 8 out of 18(44.4%) cases had non-specific fever and proved to have acute B19 infection, one ALL case with positive B19 IgM and/or B19 DNA out of 3 (33.3%) with bilateral cervical lymphadenopathy, 5 out of 6 (83.3%) cases with

	acute B19 infection had hepatosplenomegaly. Based on the sample studied, 15% of true B19-IgM was identified by ELISA test compared to13% of true B19-DNA signal detection by real time- PCR, whereas 100% of correctly no detectable B19 –DNA signal was identified in healthy control using real time-PCR, compared to 95% of negative B19-IgM in serum level among control group using ELISA. A child who has a detected B19-DNA signal by real time-PCR has a 100% chance of having acute infection compared to 77% chance of using ELISA test. **Conclusions** The study results are consistent with previous studies which appear that children who suffering from ALL are at increased risk of B19 infection. The use of real time PCR detects high B19-DNA viral load. Notable percentage ofpersistent B19 infection was recorded among children with ALL who are receiving ongoing treatment, in addition, most of acute B19 infected ALL cases were asymptomatic. Acute B19-infection was shown to be an important cause of anemia and cytopenia in children with ALL. **Recommendation:** Further follow up studies are necessary to clarify the role of B19 infection in unexplained anemia in children with ALL.