Gene rearrangements *BCR-ABL1* and *TCF3-PBX1* are associated with resistance to treatment and infiltration of central nervous system in brazilian adult patients with acute lymphoblastic leukemia

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Introduction: Acute Lymphoblastic Leukemia (ALL) in adults is considered heterogeneous in clinical, laboratory and prognosis aspects. Identify molecular markers that may help on risk stratification, prognosis and treatment can improve survival in these patients. **Objectives:** Determine the frequency of *BCR-ABL1, TCF3-PBX1, ETV6-RUNX1* and *MLL-AFF1* molecular markers and your association with clinical and laboratory characteristics in adult ALL patients. **Material and Methods:** This study included 69 adult ALL patients over 18-years-old between January/2008 and December/2015 at Hospital Hemope, Brazil. Molecular analysis of RT-PCR was performed according to the BIOMED-1 protocol. **Results and Discussion:** The majority of the patients were male (64%) and young adults (55%). The frequency of rearrangements found were 33%, 7.3%, 1.4% and 0% for *BCR-ABL1, TCF3-PBX1*, *ETV6-RUNX1* and *MLL-AFF1*, respectively. The *BCR-ABL1* fusion gene was associated with low complete remission rates (p= 0.042) and resistance to treatment (p= 0.002), while *TCF3-PBX1* oncogene was strongly associated with infiltration of the central nervous system (CNS) (p= 0.001). Patients with T-ALL and positive for *BCR-ABL1* and *TCF3-PBX1* had lower survival rates when compared to B-ALL and absence of rearrangements. **Conclusions:** This study made it possible to establish a clinical-laboratory and molecular profile of adult ALL patients where a high frequency of rearrangements *BCR-ABL1* and *TCF3-PBX1* gene related to poor prognosis in association with resistance to treatment and infiltration of the CNS.

Keywords: Acute Lymphoblastic Leukemia; Gene Rearrangement; Resistance to Treatment.
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