

## Multidrug Resistance- related Protein (MRP) and Lung Resistance Protein (LRP) mRNA Expression in Egyptian Patients with Acute Leukemia

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### **Abstract**

**Background and objectives:** Clinical resistance to chemotherapy is a major obstacle in treatment and an important cause of death in acute leukemia. Such resistance is usually associated with the expression of multidrug resistance (MDR) genes. The significance of MDR genes expression is still controversial

**Aim of the work:** We investigated whether multidrug resistance-related protein (MRP) and lung resistance protein (LRP) mRNA expression are associated with outcomes, clinical and laboratory findings in acute leukemia patients.

**Patients & methods:** At diagnosis we examined MRP and LRP mRNA expression in peripheral blood samples from 50 Egyptian Acute Leukemia patients (25 myeloid & 25 lymphoblastic) using nested RT-PCR. Ten age matched normal individuals were included as control group.

**Results:** mRNA of MRP and LRP genes were detected in 28/50 (56%) & 22/50 (44%) respectively, while there was double expression of both genes in 18/50 (36%) of acute leukemia patients. There was no statistically significant difference between MRP & LRP positive and negative patients as regards their clinical and laboratory data including age, sex, hemoglobin, platelets, hepatosplenomegaly, lymphadenopathy and CNS involvement. As regards Total leucocytic count (TLC) the comparison between positive and negative cases showed high statistically significant difference ( $p < 0.005$ ). MRP & LRP mRNA expression at initial diagnosis was associated with a lower CR rate after induction chemotherapy, with only 6/28 (21.4%) of MRP positive acute leukemia patients achieving CR, compared to 15/22 (68.1%) of MRP negative acute leukemia patients achieving CR ( **$P < 0.05$** ), while 3/22 (13.6%) of LRP positive acute leukemia patients achieved CR compared to 18/28 (64.3%) of LRP negative acute leukemia patients achieved CR ( **$P < 0.005$** ). Concerning cases that showed double positivity of both genes: 3/18 (16.6%) of them achieved CR while 15/18 (83.3%) didn't achieve CR after induction chemotherapy ( **$p < 0.005$** ).

**Conclusion:** The present data suggest that MRP & LRP genes expression affects complete remission in acute leukemia patients. Thus, determination of these genes expression at diagnosis appears likely to provide useful prognostic information for acute leukemia patients.