Prognostic significance of FMS-like tyrosine kinase receptor internal tandem duplication (FLT3-ITD) and V592A point mutation in Egyptian adult acute myeloid leukemia

Abeer A Saad, Hoda M ElGendy, Amal A Mohamed, Mervate A Elfiky, Botheina Ahmed Thabet Farweez and Rehab S El-Hagracy
Ain Shams University, Egypt

Introduction: FLT3 internal tandem duplication mutation (FLT3-ITD) is the most common type of FLT3 mutation in normal karyotype acute myeloid leukemia (AML). Between 15% and 34% of AML patients show FLT3-ITD mutations.

Objectives: To study the frequency of FLT3-ITD and FLT3-V592A point mutation in adult AML patients, to evaluate their relation to patients' characteristics and to estimate the impact of these mutations on patients' outcome and survival.

Patients and Methods: The study was conducted on 54 newly diagnosed adult AML patients. Detection of FLT3 gene mutation (FLT3-ITD and FLT3-V592A point mutation was done by real time polymerase chain reaction.

Results: FLT3-ITD was expressed in 40% of AML cases; only one (2.5%) case had V592A point mutation. Significant higher age and lower platelet count were observed in ITD group. Relapse incidence was 65% in FLT-ITD compared to 35% among wild-FLT3. Overall survival (OS) and disease free survival (DFS) were significantly shorter with FLT3-ITD (p<0.001). No significant association was observed between FLT3 mutation and cytogenetic risk or FAB subtypes (p>0.05). Age≥60, TLC>30x10^9/L, PLT count<30x10^9/L, FAB M5 and poor cytogenetic risk were associated with poor OS. Multivariate Cox regression analysis revealed that both FLT3-ITD mutation and cytogenetic risk are associated with poor one year-OS (95% CI=1.687-11.216 and 1.755-8.841; P=0.002 and 0.001 respectively) and RFS (95% CI=3.184-41.885 and 2.288-17.227 respectively; P<0.001 for both comparisons).

Conclusion: The presence of FLT3-ITD carries worse prognosis in AML and could be a predictor for treatment response, OS and RFS. Its presence reflects outcome particularly with intermediate risk cytogenetics.

Biography
Abeer A Saad is Assistant Professor of Clinical Pathology Department, Faculty of Medicine, Ain Shams University, Cairo, Egypt. He completed his MB, BCh in December 1997 and MD in Clinical Pathology in November 2005 all from Ain Shams University, Cairo, Egypt. He worked in general hematology, flow cytometry and haemostasis & thrombosis diagnostic lab. He is a member of International Society of Thrombosis and Haemostasis. He has more than 15 publications in internationally recognized journals.