FLT3-Internal Tandem Duplication and C-kit D816V Mutations in Sudanese Patients with Acute Myeloid Leukaemia

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Background: There are considerable data showing that AML, like other human cancers, is the consequence of more than one mutation. fms-like tyrosine kinase 3 (FLT3) and KIT genes belong to the family of tyrosine kinase class III receptors that induce signals for cell proliferation. Mutations of these genes; however, result in autonomously leukemic cell proliferation and an unfavorable prognosis.

Objectives: To determine the frequency of C-kit D816V and FLT3 ITD mutations among Sudanese patients with AML.

Material and method: This study included 44 newly diagnosed AML Sudanese patients. Two and half milliliter (ml) of venous blood were collected from each patient in EDTA container for hematological and molecular analysis. Genomic DNA was extracted by DNA Salting out protocol . All samples were analyzed for FLT3-ITD mutation on chromosome 13, exon 11 using conventional PCR and C-kit mutation at codon 816 of exon 17 using allele specific PCR. Data was analyzed by statistical package for social sciences (SPSS), version 20.

Result: A total of 44 Sudanese patients diagnosed with AML were enrolled in this study .19(43.2%) were males and 25 (56.8%) were females ; their age ranged 2-92 years (mean 39.53). Blast percent was ranged 23-90% (mean: 54.1%) and total WBCs count ranged 2100-28000/L (mean: 1631).

The results showed that, while FLT3-ITD mutation was totally absent, C-kitD816V mutation was found in 50% of the patients.

No statistically significant difference was found in mean age of incidence (*P.value* = 0.974), blast percentage (*P.value* = 0.595), and total WBCs count (*P.value* = 0.123).