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Genetic variations in tumor necrosis factor related apoptosis-inducing ligand-1 and the susceptibility to B cell Non-Hodgkin lymphoma in Egypt

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B-cell non-Hodgkin lymphomas (B-NHL) represent a heterogeneous group of disorders characterized in most cases by genetic alterations and chromosomal translocations. As lymphoma is a multi-hit phenomenon, other genetic abnormalities including concurrent deregulation of other dominant oncogenes and/or inactivation of tumor suppressor genes (TSGs) are necessary for lymphomagenesis. Tumor necrosis factor-related apoptosis inducing ligand-1 (TRAIL1) and its receptor (TRAIL-R) engage the suicide machinery of cells and activates the apoptotic proteases to mediate apoptosis. Dysregulation of their function due to genetic alterations has been reported to play a crucial role in the pathogenesis of different cancers. To explore the possible association between TRAIL1-C626G, -A683C and -A1322G single nucleotide polymorphisms (SNPs) and the susceptibility to B-NHL in a cohort of Egyptians, we conducted a case-control study. The study included 100 B-NHL patients and 150 healthy controls. Genotyping of TRAIL1 (rs20575, rs20576, and rs2230229) SNPs was done by polymerase chain reaction technique.

Results: The frequency of polymorphic alleles of TRAIL1-C626G and A1322G SNPs was higher in B-NHL cases compared to controls and conferred twofold increased risk of B-NHL in Egyptians (OR=1.76, 95%CI=1.01-3.07 and OR=2.04, 95%CI=1.02-4.07 respectively). There was no statistical difference in the distribution of TRAIL1-A683C genotypes between B-NHL patients and controls (OR=1, 95%CI=0.5-2). Combined genotypes analysis revealed that coinheritance of TRAIL1-C626G and A1322G conferred fivefold increased the risk of B-NHL (OR=5.02, 95%CI=2.35-10.73), while coinheritance of A683C and A1322G was associated with almost threefold increased risk of B-NHL (OR=2.6, 95%CI=1/05-6.73). Co-existence of the variant genotypes of the three SNPs conferred fourfold increased risk of BNHL (OR=4.1, 95%CI=1.01-17.63). In conclusion, genetic variations in TRAIL1 gene could be considered as molecular risk factor for B-NHL among Egyptians. Deeper insight into the contribution of TRAIL1 genetic polymorphism in lymphomagenesis is recommended. Furthermore, TRAIL is a novel promising treatment target for hematological malignancies. Ultimately, functional studies concerning the role of these polymorphisms may allow the identification of potential therapeutic targets.

Biography

Meravt Khorshied has completed her MD at the age of 34 years from Kasr Al Ainy School of Medicine, Cairo University and postdoctoral studies from CairoUniversity School of Medicine. She is the director of Teaching module of the master of Clinical and Chemical pathology, Faculty of Medicine, Cairo University. A former member of the committee responsible for directing and improving blood banks as well as conduction of point of care system, Kasr Al Ainy Teaching Hospitals, Cairo University. She has published more than 25 papers in reputed journals and has been serving as an editorial board member of repute.

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