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THIOREDOXIN REDUCTASE GENE EXPRESSION AND ACTIVITY AMONG HTLV-1 INFECTED PATIENTS

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Background: Human T-cell lymphotropic virus type 1 (HTLV-I) is a human retrovirus causing potential serious outcomes. Thioredoxin system, a reducing complex, consists of thioredoxin (Trx), thioredoxin reductase (TrxR) and NADPH and scavenges reactive oxygen species (ROS). The system prevents apoptosis and plays an important role in protection against oxidative stress-related diseases. We investigated possible alterations in serum TrxR activity and cellular gene expression as a response to oxidative stress during HTLV-I infection.

Material & Methods: Blood samples were collected from forty HTLV-I patients and forty healthy controls. The patients group consisted of chronic carriers and HAM/TSP patients. A commercial kit was used to measure the enzyme activity. Also real time PCR was performed to measure TrxR gene expression in extracted PBMCs as the main infected cells.

Results: In patients group enzyme activity was significantly lower than healthy cases ($p<0.05$). In addition enzyme activity in HAM/TSP patients was lower than asymptomatic HTLV1 carriers. (Mean ± SD: HAM-TSP: 0.0928±0.047, carrier: 0.134±0.065 and controls: 0.1734±0.056 µmol/min/ml; respectively). TrxR gene expression showed the same decreasing trend. The fold difference of expression for carriers and HAM-TSP groups in comparison to the healthy controls were 0.8, 0.7 versus 1, respectively.

Conclusion: We showed a reduction in TrxR activity in HTLV-I infected individuals particularly in HAM/TSP patients. Cellular studies showed a reduction in TrxR gene expression. The reduced TrxR activity during HTLV-1 infection might contribute in mechanisms leading to progression to virus-induced complications. The impaired activity of thioredoxin system might result in exacerbated infection-induced oxidative stress condition.

Biography

Farnaz Zahedi Avval has got her MD from Mashhad University of Medical Sciences, Iran. She completed her PhD from Karolinska Institute, Sweden. She has published several papers in reputed journals and has been serving as an Assistant Professor at the Department of Clinical Biochemistry at Mashhad University of Medical Sciences, Iran.

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