OMICS Group Conferences
Accelerating Scientific Discovery

4th International Conference on
Biomarkers & Clinical Research

July 15-17, 2013 Courtyard by Marriott Philadelphia Downtown, USA

Serum neuron-specific enolase and S-100β levels as prognostic follow-up markers for oxygen administered carbon monoxide intoxication cases

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Abstract

Serum neuron-specific enolase (NSE) and S-100β levels are considered as biochemical markers for neuronal cell injury. In this study, the initial and post-treatment levels of NSE and S-100β were compared in carbon monoxide (CO) poisoning patients who received normorbaric or hyperbaric oxygen (HBO) therapy. Forty consecutive patients with acute CO poisoning were enrolled in this prospective, observational study. According to their clinical symptoms and observations, twenty of the patients were treated with normobaric oxygen (NBO), and the other twenty with HBO. Serum S-100β and NSE levels were measured both at time of admission and 6 h later (post-treatment). Serum NSE and S-100β values decreased significantly with both of the therapeutic modalities (P=0.002 for NSE and P=0.018 for S-100β treated with HBO; P=0.004 for NSE and P=0.001 for S-100β treated with NBO). The initial and post-treatment values of NSE and S-100β resulted in comparable ranges among the NBO or HBO received patients (P>0.05 for all). A clear negative correlation was recorded between the fall of the measured biomarkers and the initial blood carboxyhemoglobin (HbCO) levels (r=–0.324 and P=0.008 between NSE and HbCO; r=–0.398 and P=0.032 among S-100β and HbCO). In conclusion, the present results support the use of serum S-100β and NSE levels as indicators for brain injury. Due to the significant increase of their values with oxygen therapy, they also may be useful as prognostic follow-up markers. On the other hand, the current findings reflect no difference for the efficacy of NBO or HBO therapy.

Biography

Sukru Oter, born in 1970 in Berlin (Germany), has completed his MD in 1993 at the Medical Faculty of Istanbul University, Istanbul and PhD in 1998 at the Department of Physiology, Gulhane Military Medical Academy, Ankara, Turkey. His position changed to Assistant Professor in 2013, to Associate Professor in 2008 and to full Professor in 2012 at the same Institution where he is already employed as senior academician and researcher. He has published more than 70 articles with the roles of first, co- as well as senior author in internationally peer-reviewed journals.