1545908

Immunological Response may affect the clinical outcome in Acute Vascular Stroke

Blum, A[1]; Vaispapir, V[1]; Haiek, S[2]; Shalabi, R[2]
[1]Baruch-Padeh Poria Hospital, Tiberias, Israel; [2]Haifa University / School of Publica Health, Haifa, Israel

Background and Purpose – activation of endothelial cells is an important mediator of atherothrombosis. Markers of endothelial cells such as soluble adhesion molecules can be measured in plasma and reflect the activity of the endothelium and the inflammatory system. We hypothesized that patients with acute ischemic stroke would have a dynamic change in their markers of inflammation over time, primarily reflecting activation of endothelial cells and the immunological ability to respond to an acute brain insult. We also believed that the acute inflammatory response in the first 72 hours may affect the short and long term clinical outcome.

Methods – We conducted a prospective case study of 27 patients that were admitted with acute ischemic stroke during the years 2005-2007. All were examined clinically using the National Institute Neurological Scale [NIHNS] and a brain computed tomography (CT) scan was done in the first 24 hours. Blood was drawn for levels of E-selectin, intracellular adhesion molecule 1 (ICAM-1), and vascular cellular adhesion molecule 1 (VCAM-1) on admission and 48 hours later by ELISA methods. The blood was separated and the serum was frozen at -80oC until analyzed as one batch.

Results - Mean blood concentrations of soluble E-selectin, intracellular adhesion molecule 1 (ICAM-1), and vascular cell adhesion molecule 1 (VCAM-1) were measured on admission and 48 hours later. Clinically there were 3 groups – 6 patients with transient ischemic attack [TIA] (58±12 years old, 3 women and 3 men), 8 patients with cerebrovascular accident [CVA] without recovery (75±18 years old, 4 women and 4 men), and 13 patients with CVA who recovered clinically (70±13 years old, 6 women and 7 men). There was a significant increase in E-selectin level in the second measurement (from 27.5±21.6 ng/mL to 38.7±19.6 ng/mL; Z=-1.997, p=0.046) in the TIA group. An inverse correlation was found between E-selectin level and age among TIA patients on admission (r=-0.913, p=0.011) and 48 hours later (r=-0.850, p=0.032). A positive correlation between E-selectin level and age was found among CVA patients with clinical recovery – on admission (r=0.576, p=0.050) and 48 hours later (r=0.567, p=0.054). A correlation between ICAM-1 and VCAM-1 levels was found 48 hours post admission (r=0.436, p=0.026).

Conclusions – We have demonstrated a significant increase in E-selectin level within 48 hours among patients with TIA. In the TIA group there was an inverse correlation between age and E-selectin level. This may suggest that younger patients can protect their ischemic brain more efficiently due to a more competent immune system, and that the immune system may have an important role in ischemic brain injury.