LONG-TERM COGNITIVE DEFICITS AND BRAIN DYSFUNCTION AFTER RECOVERY FROM SEPSIS

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Acute cognitive dysfunction in response to sepsis has been well established, however the presence of long-term cognitive deficits and brain dysfunction after recovery has not yet been investigated. The present study compared septic (n = 25, 12 female, 13 male) and non-septic ICU-survivors (n = 26, 9 female, 17 male) at 6-24 months after discharge from hospital. Brain volumetry, resting state electroencephalography and a neuropsychological assessment including Neuro Cognitive Effects (NeuroCogFx), Short Form-36 Health Survey (SF-36), the Symptom Check List 90-R (SCL90-R), as well as Beck’s Depression Inventory (BDI) were performed. Additionally, comprehensive medical data were collected, including diagnosis at admission, length of intensive care unit (ICU) stay, physiological health status (i.e., APACHE II scores), cardiovascular data, ventilator data and drugs received.

Sepsis patients as well as non-septic ICU survivors revealed long-term cognitive impairment compared to healthy norms on a level similar to mild cognitive impairment on measures of attention, working memory, executive function and phonetic verbal fluency. In addition, sepsis patients also had deficits in verbal learning and verbal episodic memory.

Moreover, sepsis patients showed left hippocampal atrophy. Both patient groups had more low-frequency activity in the resting-state EEG, indicating unspecific brain dysfunction. Both groups showed similar reduced health-related quality of life and lowered psychological well-being scores, but no clinically relevant depression, ruling out depression as a confounding factor for cognitive decline.

These data objectively confirm long-term cognitive impairment, brain atrophy and brain dysfunction in sepsis survivors and other ICU patients.