Introduction:
Therapeutic hypothermia has not been used before our research in chronically critically ill (CCI) patients. Temperature decrease in neuronal cells is a strong signal that triggers endogenic cytoprotection programs using early response genes expression. Our goal is to determine influences of craniocerebral hypothermia (CCH) on level of consciousness in CCI patients.

Methods:
We examined 98 patients with different types of brain injuries. 54 males and 44 females, mean age 45.56 ±16.03. Patients were divided into 2 groups: main group - 47 patients (Vegetative State (VS) – 28, minimally conscious state (MCS) – 19), comparison group – 51 patient (VS – 32, MCS –19), groups were equal on main parameters (severity, functional state, comorbidity). Patients from main group received courses of CCH, duration -180 minutes, scalp temperature 5-8 °С, cerebral cortex cooling up to 32-34 °C, session end was without slow reheating period, and session’s amount was set - until signs of consciousness recovery. Cortex temperature check done noninvasively by using detection of brain tissue EMI in SHF- range. Consciousness recovery in VS and MCS patients controlled using CRS-R scale.

Results:
CCH sessions significantly increased level of consciousness in VS and MCS patient groups. In VS patients vegetative state increased until minimally conscious state and MCS +, and in MCS group until lucid consciousness (p <0.05). (Figure 1)

Conclusion:
Craniocerebral Hypothermia is used in chronically critically ill patients for the first time. Our research results demonstrated effectiveness of CCH as an additive treatment tool in such patients. This let us optimistically determine the perspective of inclusion of CCH method in chronically critically ill patient’s rehabilitation to increase level of consciousness.

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