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The impact of cranioplasty on cognitive functions and emotional-personal sphere of patients

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Background: Topic of our research is relevant in modern neurotraumatology, as skull defect is not only a neurological and cosmetic deficiency, but also a great psychological problem.

Objective: To evaluate the dynamics of anxiety, depression, and cognitive functions in patients after TBI, at the stage of cranioplasty.

Methods: Patients were tested by the same psychologist before cranioplasty, on the 3rd day, and the 8th day after surgery. Montreal Cognitive Assessment (MoCA), Frontal Assessment Battery (FAB), neurocognitive tests according to Luria, trail making test, verbal fluency test, Wechsler Adult Intelligence Scale (WAIS) (working memory Index: arithmetic, digit span), beck depression inventory, Spielberger-Hanin anxiety test. Patients were asked to self-evaluate their appearance in the periods of life before acquiring the defect, as well as before and after cranioplasty. All patients had sessions with a psychologist directed to lower the level of anxiety and depression after TBI during their stay in hospital (cognitive behavioral therapy and art-therapy).

Results: We examined 43 patients (avg. 34.8 y.o.) undergoing cranioplasty. A statistically significant increase in MoCA scores was observed by the 8th day after surgery ($p=6.248e-05$), FAB ($p=5.633e-10$). Depression and anxiety (personal and situational) were significantly reduced by the 8th day (depression $p=1.371e-12$; personal anxiety $p=2.511e-12$).

Conclusion: The obtained results show statistically significant improvement of cognitive functions, reduction of level of depression, anxiety, improvement of emotional state of patients in the early postoperative period after cranioplasty.

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