Features of structure and predictors of cognitive disorders in patients after cardiac surgery

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Background: Cognitive disorders (CDs) are the most common neurological complications in cardiac surgery. Understanding the predictors associated with the occurrence of CDs, identifying modified risk factors, can accelerate recovery, improve prevention and treatment algorithms after cardiac surgery.

The aim - to determine the structure and predictors of CDs in patients before surgery and in the early postoperative period (3rd and 7th days).

Methods: 56 patients were examined, including 19 (33.9%) men (p=0.02). The average age of the patients was 60.86±8.87 years. Cardiac surgery was performed for coronary heart disease in 37 (66.1%) and valvular heart disease in 19 (33.9%) patients (p=0.02). The duration of the operation ranged from 240 to 600 minutes, averaging 371.94±102.04 minutes. In 25 (44.6%) cases, the operations were performed in conditions of cardiopulmonary bypass (CB), the average duration of which didn't differ from operations without CB (389.44±116.88 vs. 355.47±86.16, p=0.34). Testing was performed before surgery, on the 3rd and 7th day of the postoperative period using Montreal Cognitive Test. Statistical processing was performed using the statistical software package SPSS 12.0 for Windows.

Results: 75% of the patients already had mild CDs before surgery. The structure of CDs in the early postoperative period didn't differ from the data before surgery, however, there were patients with severe CDs (3.6% and 2% vs. 0%, p=0.05).

In the structure of the CDs on the 3rd day of the postoperative period there were a significant decrease of visuospatial skills (4.07 vs. 3.7, $p<0.001$), ability to consistent calculation (2.66 vs. 2.45, p=0.02), repetition of the phrase (1.16 vs. 1.0, p=0.02). On the 7th day of the postoperative period, there were a significant decrease of verbal speed (0.48 vs. 0.32, p=0.006) and memory improvement (1.79 vs. 2.29, p=0.01).

The probable predictors of CDs in the early postoperative period are: history of stroke – r=–0.282, p=0.04; presence of atherosclerotic plaques in the coronary arteries according to coronary angiography – r=–0.259, p=0.05; surgery with CB – r=0.29, p=0.03 and presence signs of dyslipidemia according to the lipid profile – r=–0.227, p=0.09.

Conclusions: 75% of the patients already had mild CD before surgery. The structure of CDs in the early postoperative period didn't differ from the data before surgery, however, there were patients with severe CD.

In the structure of the CDs on the 3rd day of the postoperative period there were a significant decrease of visuospatial, ability to consistent calculation, repetition of the phrase. On the 7th day of the postoperative period, there were a significant decrease in verbal speed and memory improvement.

Probable predictors of CDs in the early postoperative period are: history of stroke; presence of atherosclerotic plaques in the coronary arteries; surgery with CB and presence of signs of dyslipidemia.