Improve of Velocity in Middle Cerebral Artery after AVR Monitored by Transcranial Doppler

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Objective:

Cerebral blood flow is influenced by several factors among them cardiac output. The purpose of the study was to show if there are changes in cerebral hemodynamics before and after Aortic valve replacement (AVR).

Methods:

Six patients were connected to a TCD before surgery. After they have been given anesthetics and before any heart manipulation had been done we recorded 5 minutes of cerebral blood velocity by TCD in the middle cerebral artery (MCA). 10 minutes before the end of the surgery we recorded again the cerebral blood velocity and compared data before and after.

Results:

The average peak envelope velocity of systolic and diastolic parameters over one cardiac cycle, were 22.22±8.25 and 34.56±7.24 cm\min, before and after surgery respectively, an increase of 55.5% (p=0.005). The average of singular peak velocity was 41.63±16.74 and 70.22±17.15 (cm\min) before and after surgery respectively, an increase of 103% (p=0.008). The end diastolic velocity was 10.75±3.71 and 17.65±3/27 (cm\min) before and after surgery respectively, an increase of 64% (p=0.0003).

Conclusion:

There is a dramatic improvement in blood cerebral velocity measured in the MCA after AVR surgery. Additional to the importance of this finding as a parameter of improved cerebral perfusion, is the possible positive impact it can have on the cognitive function after heart surgery, which should be studied in future researches.