C69. Transcranial Doppler Ultrasonography For Detection Of Cerebral Embolism During Transapical Aortic Valve Implantation

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OBJECTIVES: Downstream micro-embolization is expected in transapical aortic valve implantation and may be associated with an increased risk of stroke. However, the clinical relevance of ultrasound micro-embolic signals detected in the middle cerebral artery is unknown.

METHODS: Between April 2008 and February 2009, 76 patients (mean EuroSCORE: 39±21%; mean age 78±10 years, 54 women) underwent transapical aortic valve implantation using Edwards Sapien valves. Intraoperative transcranial Doppler (TCD) ultrasound examination of the middle cerebral artery (MCA) was performed to identify potential embolic complications. The patients were examined preoperatively and early postoperatively for critical neurology.

RESULTS: During transapical aortic valve implantation high-intensity transient signals (HITS) were detected in all patients (right MCA, median 435, range 9-5765; left MCA, median 428, range 24-6432). Microemboli signals (MES) were also counted (right MCA, median 78, range 1-955; left MCA, median 62, range 2-1533). Most MES were recorded during valvuloplasty (right MCA, median 3, range 0-135; left MCA, median 2, range 0-52) and positioning of the prosthetic valve in aortic position (right MCA, median 6, range 0-22; left MCA, median 2, range 0-38) ($p<0.05$). Although in five patients minor infarctions were diagnosed by computed tomography, no patient had clinical signs of cerebral embolism.

CONCLUSIONS: Intraoperative transcranial Doppler ultrasound examinations detected HITS and MES in all patients during transapical aortic valve implantation. Most signals were detected during balloon valvuloplasty and delivery of the prosthetic valve. Cerebral microembolization frequently occurs during transapical aortic valve implantation but – in our small group of patients – it had no clinical relevance.