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Complications related to regional anesthesia for carotid endarterectomy - a comparison of cervical epidural anesthesia versus cervical plexus block

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Introduction: Regional anesthesia is a recommended technique for carotid artery surgery mainly because of high-quality and inexpensive consciousness monitoring, possibility of selective intraluminal shunt introduction, better intraoperative circulatory stability of the patient, and reductions in hospital stay length and costs. While there are some studies comparing regional versus general anesthesia in these procedures, no study comparing the success and complication rates of individual techniques of regional anesthesia has been published to date.

Methods: The aim of this retrospective study was to evaluate a total of 396 carotid artery procedures performed under regional anesthesia in our departments in the 1998-2002 period. A total of 245 procedures were performed using cervical plexus block (PCB; C3 and C2 block with a neurostimulator and a superficial block), 151 procedures were performed under cervical epidural anesthesia. The mean age of patients was 67.2 (+ 9.7) years. The evaluated parameters included the success rate of the selected types of anesthesia, mean time from the start of block to start of procedure, and technical, neurological, circulatory, and other complication rates. The data obtained were analyzed statistically using ANOVA.

Results: Results are shown in Table 1:

Type of anesthesia	N	Success rate	Mean time (mins)	Technical	Neurological	Cardio-vascular	Other
PCB	245	96.1%	29.3 (+ 6.9)	7 (2.8%)	6 (2.4%)	86 (35.1%)	2 (0.8%)
CEA	151	96.8%	39.9 (+ 9.7)	6 (4.0%)	7 (4.6%)	12 (7.9%)	2 (1.3%)

Among serious complications, a threat to vital function, and unconsciousness with seizures in PBC were noted in 2 cases (0.8%) as a result of LA administration into the vertebral artery, and in 1 case with CEA (0.7% - subarachnoid application), acute myocardial infarction were noted in 4 PCB/1 CEA (2.7%/0.7%) cases. Total intraoperative mortality in the group was 4 patients (1.0%). All deaths were related to intraoperative stroke. Among neurological block-associated complications, partial upper limb paresis was present in CEA and partial block of the cranial nerves in PCB. Both findings made neurological monitoring of the patient more difficult. Circulatory complications included hypertension in PBC, and hypotension and bradycardia in CEA.

Conclusions: Both techniques of regional anesthesia are reliable for carotid artery surgery. PCB is a less expensive, technically easier and more rapid method; however, it is associated with higher rates of cardiovascular complications related mainly to hypertension and the risk for intraoperative myocardial ischemia ($p < 0,05$). We recommend to use CEA in patients with a serious cardiac history, mainly because of its blocking of the stress response and its coronaro-dilated effect.

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