

Miscellaneous

22. Benefits of regional anesthesia: a metaanalysis up to January 1 2004

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Keywords:

Background: Though a significant reduction in mortality and morbidity with the use of regional anesthesia (RA) was demonstrated in a metaanalysis published in 2000 [1], the benefits of RA are still not universally admitted among the medical community [2]. Some authorities argue that this extensive metaanalysis suffered from combining heterogeneous data and overemphasizing results from older studies. Indeed studies published after January 1 1997 were not included. The aim of the present metaanalysis was to determine the differences in major outcome between patients operated under RA or general anesthesia (GA).

Methods: From PUBMED [complications AND RA AND GA] and from references of other related publications, a total 1726 studies were screened for potential relevance of which 181 were retrieved and 50 finally kept for analysis from the following criteria: prospective randomized study, manuscript published in English, studying of major complications was a primary objective, inclusion of one group of patients with and one without GA. Data were tested for heterogeneity and analyzed with Cochran-Mantel-Haenszel Tests after stratification by the type of surgery and by five-year periods from 1979 to 2003.

Results: Apart from renal failure ($P>0.05$) and wound infection ($P<0.01$), the P value for heterogeneity was <0.001 for all data: Compared to patients operated under GA, RA patients had a reduced rate of mortality ($P=0.004$), deep venous thrombosis ($P<0.0001$), pulmonary emboly ($P=0.0008$) and reoperation ($P=0.02$) (Table).

Table. Benefits of regional anesthesia.

	Odds Ratio*	Lower-Upper*	P value†
Death	0.58	0.43-0.78	=0.004
Deep venous thrombosis	0.43	0.35-0.53	<0.0001
Pulmonary emboly	0.42	0.25-0.69	=0.0008
Myocardial infarction	0.89	0.52-1.50	=0.40
Cerebrovascular accident	1.12	0.50-2.50	=0.77
Acute pulmonary edema	1.37	0.78-2.47	=0.31
Renal failure	1.78	0.50-7.01	=0.41
Pneumonia	0.79	0.53-1.17	=0.26
Wound infection	0.77	0.47-1.28	=0.26
Reoperation	0.57	0.34-0.93	=0.02

* Likelihood ratio tests, † Cochran-Mantel-Haenszel tests after stratification by five-year periods from 1979 to 2003 inclusively.

Discussion: Avoidance of GA reduces the mortality rate. Benefits of RA, however must be balanced against the risks of severe complications associated with it such as spinal (1:104038) and epidural related hematoma (1:55612) which might both be more frequent than once thought [3]. Since the morbidity associated with peripheral nerve blocks is by far less severe than the one associated with neuraxial blocks, this type of RA should probably be first choice whenever possible.

References:

1. BMJ 2000; 321: 1493-7.
2. Br J Anaesth 2004; 92: 4-6.
3. Can J Anesth 2004; 51(5):

27. Lateral and posterior meningeal septa in human subarachnoid space

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A morphologic study using human vertebral column showed arachnoid septum in dorsolateral subarachnoid region. We present various types of dorsolateral transeverse arachnoid septa (DLTAS) in human fresh cadavers. [Methods] Normal human spinal cords were obtained from 7 cadavers. Following removal of vertebral columns, those were decalcified using 5% nitric acid. Morphology of the whole arachnoid membrane in each specimens was observed using the naked eye or under binocular stereomicroscopy, and transverse and longitudinal sections were examined under light microscopy. [Results] Almost all specimens exhibited dorsal arachnoid septum (DAS) and dorsolateral arachnoid septum (DLAS), those extended longitudinally from the upper cervical to the midthoracic or lumbar level of spinal cord. The DLTAS were thin, crossing the DAS vertically from the upper to the lower thoracic level at regular intervals. The DLTAS divided bilateral thoracic subarachnoid columns into small segmental chambers, tenting in single layer, spongy, or foamy films represented as arachnoid membrane under microscopy. [Discussion] These subarachnoid layers anchored the spinal cord to the spinal column and divided the subarachnoid space to form several chambers, which is thought to regulate a steady flow of CSF. These layers might result in occasional technical failures of successful neuraxial blocks.