

Publication

Bupivacaine concentrations in lumbar cerebrospinal fluid in patients with failed spinal anaesthesia

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BACKGROUND: Spinal anaesthesia (SA) has high success rates. However, inadequate block after SA has been reported even in the absence of technical problems. Various mechanisms for failed SA (FSA) have been proposed, but reports of cerebrospinal fluid (CSF) concentrations of local anaesthetics (LA) after FSA are scarce. We report lumbar CSF concentrations of bupivacaine in 20 patients in whom adequate block after subarachnoid injection failed to develop. **METHODS:** All patients with inadequate block after subarachnoid injection of plain bupivacaine 0.5% and in whom a second subarachnoid injection of LA was to be performed as a rescue technique were eligible for entry into this study. A CSF sample was withdrawn immediately before injection of the second dose of LA. Patients in whom failure was obviously due to technical problems or inadequate dosage were excluded. Bupivacaine concentrations were assessed with high-performance liquid chromatography. **RESULTS:** During the study period of 15 months, 2600 spinal anaesthetics were performed. The failure rate was 2.7% (71 patients). In 20 patients (0.77%), CSF concentrations of bupivacaine were determined, which ranged from 3.36 to 1020 microg ml⁻¹. **CONCLUSIONS:** Inadequate CSF concentration of LA is a common reason for FSA. However, in 12 of our 20 patients, concentrations were above 73 microg ml⁻¹, a concentration that should lead to an adequate block. In these patients, maldistribution of bupivacaine could be responsible for FSA. In view of the absence of sufficient block, despite adequate lumbar CSF concentrations of bupivacaine, concerns about neurotoxicity with repeat injections may be warranted.

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