

45. COMPARISON OF GLUCOSE-FREE BUPIVACAINE 0.5% AND BUPIVACAINE 0.5% WITH PRESERVATIVES IN SPINAL ANESTHESIA

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Introduction: Glucose-free bupivacaine 0.5% (G-free-B) for spinal anesthesia has been introduced in Japan since April 2000 for spinal anesthesia. Before that period, bupivacaine 0.5% with preservatives (paraoxybenzoic acid methyl 0.8mg/ml, paraoxybenzoic acid propyl 0.2mg/ml, B-Pres) had been used widely for isobaric spinal anesthesia. Once we have started to use G-free-B, a greater maximal cephalad spread of anesthesia was noticed. The present research was undertaken to compare the effects of G-free-B and B-Pres local anesthetics in spinal anesthesia and also we measured the density of two local anesthetics.

Methods: A double-blind prospective, randomized study was done in 35 patients (ASA PS 1 or 2) for lower limb or abdominal surgery under spinal anesthesia. All patients gave their verbal consent to participate. No premedication was given prior to spinal anesthesia. Patients were randomly divided into two groups; Group-1 (n=15), G-free-B, Group-2 (n=20), B-Pres. After arrival in the operating room, a standard intravenous infusion and monitorings were started. Dural puncture was performed at L3-4 interspace using 25 gauge Quincke needle by midline approach. After free flow of cerebrospinal fluid had been observed, needle bevel was turned toward the nondepending side, then 4.0ml of local anesthetic was injected over 20 seconds. Patient was placed to supine position immediately, the evolution of sensory block by pinprick method and motor block by using modified Bromage scale were assessed every 5 minutes for 30 minutes. Recovery of motor block and any complications including PDPH were assessed by blinded observer after surgery. Results are expressed as mean \pm SD. Differences between distributions were analyzed by the Wilcoxon two-tailed test for paired data, P??? 0.05 was considered significant.

Results: Demographic data and patients characteristic were comparable between the two groups.

Spinal anesthesia was successful in all cases. Maximal sensory block height at 30 minutes after spinal anesthesia in Group-1 was Th7.1 \pm 2.5, and in Group-2 was Th7.6 \pm 2.8 (non-depending side), Th7.8 \pm 2.5 (depending side). Onset of motor block was 12.7 \pm 5.6, in Group-1 and 9.8 \pm 5.2 minutes (non-depending side), 12.2 \pm 5.5 minutes (depending side) in Group-2. Duration of motor block was 321.4 \pm 127.9 minutes in Group-1 and 294 \pm 60 minutes in Group-2. There was significant difference in spread of spinal anesthesia between the two groups, however the duration of motor blockade was not significant. The specific gravity (SG37/37) of two anesthetics were 1.0059 (G-free-B) and 1.0064 (B-Pres). No complication during and post-operative period was noticed in all cases.

Discussion: The present investigation showed that the two different bupivacaine local anesthetics act a little different manner in spinal anesthesia. This probably due to baricity difference in two solutions. Methyl-parabenzoic acid also has a local anesthetic action, even though the duration of spinal anesthesia itself did not differ between the two solutions. This means that the difference on the spread of spinal anesthesia between the two depend on thier specific gravity.

Conclusion: G-free-B and B-Pres have different specific gravity (SG37/37) and this causes the difference of spread of spinal anesthesia. Glucose-free bupivacaine 0.5% has lower specific gravity and showed higher spread of spinal anesthesia.

1) Suzuki H, et al; Masui 47: 447-465, 1998

2) Mizuno k, et al; Masui 43: 1008-1014, 1994