Use of Hyperbaric Versus Isobaric Bupivacaine For Spinal Anaesthesia For Caesarean Section

Ban Leong Sng¹, Alex Tiong Heng Sia¹, Yvonne Lim¹

1. Department of Women’s Anaesthesia, KK Women’s and Children’s Hospital, Singapore

Introduction: This systematic review was conducted to summarise the effectiveness, safety and side effects of hyperbaric versus isobaric bupivacaine in providing spinal anaesthesia for elective and emergency Caesarean section.

Method: We searched the Cochrane Central Register of Controlled Trials (2009), MEDLINE (1996 to 2009) and EMBASE (1980 to 2009) using the keywords of Caesarean section, isobaric, hyperbaric and bupivacaine. We included randomised controlled trials, emergency and elective cases and assessed for adequate trial quality (randomisation, blinding). We identified 1502 citations from database searches, with 15 matching the criteria. We excluded 9 studies due to inadequate trial quality. Six studies were used in the analysis with 392 subjects.

Results: The 6 studies had a combined relative risk 0.17 (95% CI 0.03 to 0.94, p 0.04) favouring hyperbaric bupivacaine in decreasing the need for conversion to general anaesthesia. There was no difference in the need for supplemental analgesics between the 2 groups. Two studies with 126 subjects compared time to reach T4 sensory block. There was a mean difference of -1.3 minutes, (95% CI -1.87 to -0.73, p<0.00001) favouring hyperbaric bupivacaine for faster onset. Two studies with 157 subjects reported the amount of ephedrine used for Caesarean section. There was a mean difference of -1.79 mg (95%CI –2.03 to -1.55, p<0.00001) favouring hyperbaric bupivacaine in decreasing the ephedrine used. There was no difference in the incidence of nausea, vomiting, headache, high block and hypotension between the 2 groups.

Conclusion: This review found that using intrathecal hyperbaric bupivacaine decreased the need for conversion to general anaesthesia for Caesarean section and was associated with a more rapid onset of T4 sensory block compared to isobaric bupivacaine. Hyperbaric bupivacaine use was also associated with significant decrease in amount of ephedrine used. Although there was variability in the doses, adjuvant drugs and techniques used for spinal anaesthesia, it would appear to be favourable to use intrathecal hyperbaric bupivacaine, but larger randomised trials need to be conducted.

1. Neves, 2003
2. Richardson, 1998
4. Sarvela, 1999
5. Vercauteren, 1998
6. Vichitvejpaisal, 1992