

0.5% Bupivacaine vs 0.25% Bupivacaine vs Mepivacaine/Bupivacaine: Comparison of 3 local anesthetic regimens used in nerve blocks

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Background

Nerve blocks are a vital component of postoperative pain management. There are many local anesthetics (LA) that are utilized in nerve blocks. This study aims to gather information regarding the efficacy of 0.5% Bupivacaine vs 0.25% Bupivacaine vs Mepivacaine/Bupivacaine nerve blocks.

Methods

Over a period of 4 months, patients who received a peripheral nerve block for perioperative pain were called within 48 hrs of their surgery via telephone and asked standardized questions regarding their pain status. The data was then sorted according to what type of block was performed (Upper extremity[UE] {Supraclavicular, Interscalene, Intercostobrachial}, Lower extremity[LE] {Femoral, Sciatic, Adductor Canal, Popliteal, Fascia Iliaca}, and Other {TAPs, PECs I & II, ESP, QL}) and the type of LA that was used (0.5% Bupivacaine, 0.25% Bupivacaine, Mepivacaine/Bupivacaine).

Results

Overall, 35.54% of patients experienced pain in the Post Anesthesia Care Unit (PACU) with an average pain score of 6.5/10 (n=127). 32.14% of patients who received a block with 0.5% Bupivacaine experienced pain in the PACU with an average pain score of 5.8/10 (n=27). 47.54% of patients who received a block with 0.25% Bupivacaine experienced pain in the PACU with an average pain score of 6.8/10 (n=60). 0% of patients who received a block with Mepivacaine/Bupivacaine pain in the PACU experienced pain (n=10).

The median pain return times for 0.5% Bupivacaine, 0.25% Bupivacaine, and Mepivacaine/Bupivacaine blocks were 23.5 hrs, 9.5 hrs, and 8.83 hrs respectively (n=62).

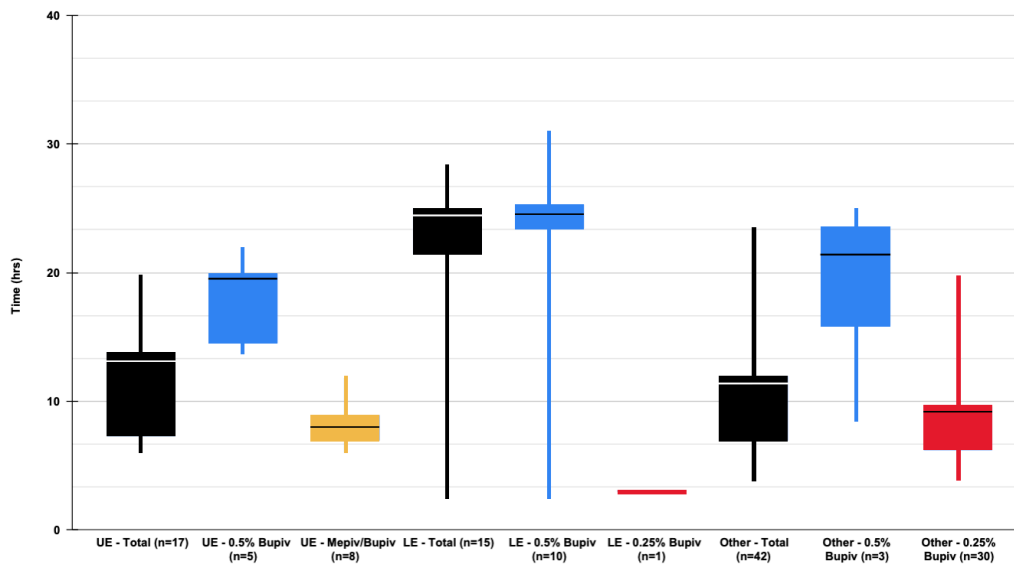
The median pain return times for UE, LE, and Other blocks were 13.67 hrs, 24.92 hrs, and 11.87 hrs respectively (n=74). The median pain return times for UE blocks that used 0.5% Bupivacaine and Mepivacaine/ Bupivacaine were 19.83 hrs and 8.83 hrs respectively (n=13). The median pain return times for LE blocks that used 0.5% Bupivacaine and 0.25% Bupivacaine were 25.21 hrs and 3 hrs respectively (n=11). The median pain return times for Other blocks that used 0.5% Bupivacaine and 0.25% Bupivacaine were 23.5 hrs and 9.5 hrs respectively (n=33).

The median motor function return times for UE and LE blocks were 18.73 hrs and 24.6 hrs respectively (n=33). The median motor function return times of UE blocks that used 0.5% Bupivacaine and Mepivacaine/Bupivacaine were 21.83 hrs and 15.96 hrs respectively (n=15). The median motor function return time for LE blocks that used 0.5% Bupivacaine was 25.05 hrs (n=8).

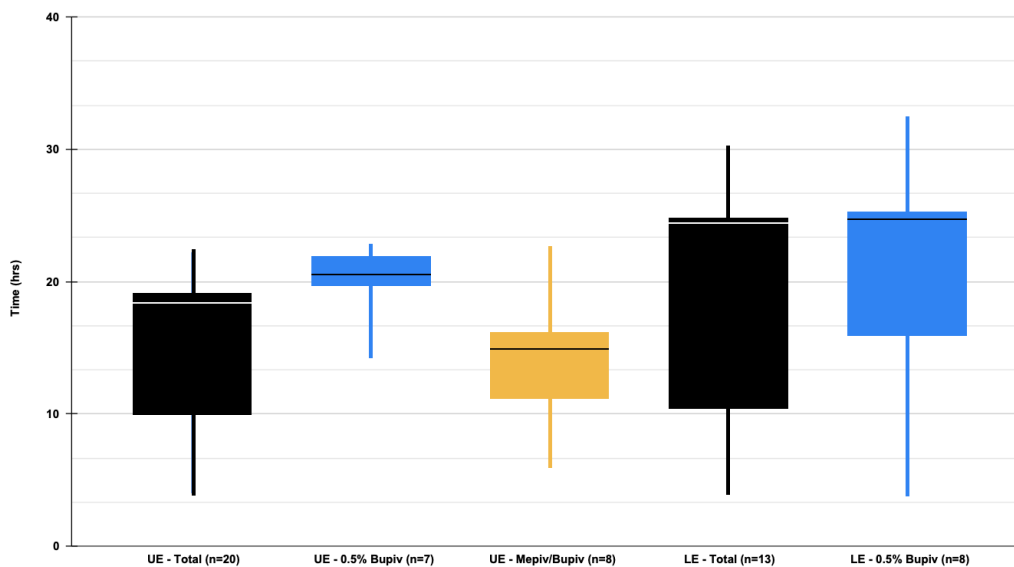
Conclusions

0.5% Bupivacaine provided longer pain control in comparison to 0.25% Bupivacaine and Mepivacaine/Bupivacaine (0.5% Bupivacaine is the superior LA for both UE and LE nerve blocks). We conclude that as long as LA toxicity is not a problem, anesthesiologists should use 0.5% Bupivacaine for all nerve blocks to provide patients with the maximum benefit from their regional anesthesia.

UE vs LE vs Other - Pain Return Timing & Local Anesthetic Used (n=74)



UE vs LE - Motor Function Return Timing & Local Anesthetic Used (n=33)



0.5% Bupiv vs 0.25% Bupiv vs Mepiv/Bupiv - Pain Return Timing (n=62)

