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INTRODUCTION

Various techniques have been explored in pursuit of enhancing the clinical efficacy of local anesthetics (LA) in nerve blocks, including the combination of LA with short onset to those of longer duration. The aim of such a mixture is presumably to reduce the sensory block onset while increasing the duration of analgesia. Although the outcome may seem to be the result of simple math, clinical studies have demonstrated conflicting results. The primary endpoint of this systematic review was to estimate the effect sizes for the onset time of sensory block in regional anesthesia guided by ultrasound when mixtures of local anesthetics with shorter and delayed onset are combined. Secondly, we evaluated motor block onset, duration of analgesia and motor block.

MATERIAL & METHODS

MEDLINE, PubMed, Web of Science, Cochrane, Embase, LILACS, and Scopus were systematically searched for randomized controlled trials (RCTs) comparing the use of a mixture of LA with short and delayed onset in regional anesthesia guided by ultrasound. We excluded papers involving the use of adjuvants other than epinephrine, neuraxial anesthesia, ophthalmologic, and digital blocks. The last search occurred on November 11, 2023. The risk of bias was appraised according to the RoB-2 tool. Statistical analysis was performed using STATA/BE v. 17.0 and R v. 4.3.2. Mean differences were calculated for all outcomes. Publication bias was assessed by funnel plots analysis of symmetry. Heterogeneity was assessed using the Cochran Q test and I² statistics. We used random-effects meta-analysis for all estimates; therefore, tau² and the 95% prediction interval (PI) were also calculated. The study adhered to the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) statement, ensuring the accuracy and transparency of the review process.

Mixture of local anesthetics offers NO BENEFIT for peripheral nerve blocks guided by USG.

RESULTS

To read more about our results and find the references, please scand the QR code →

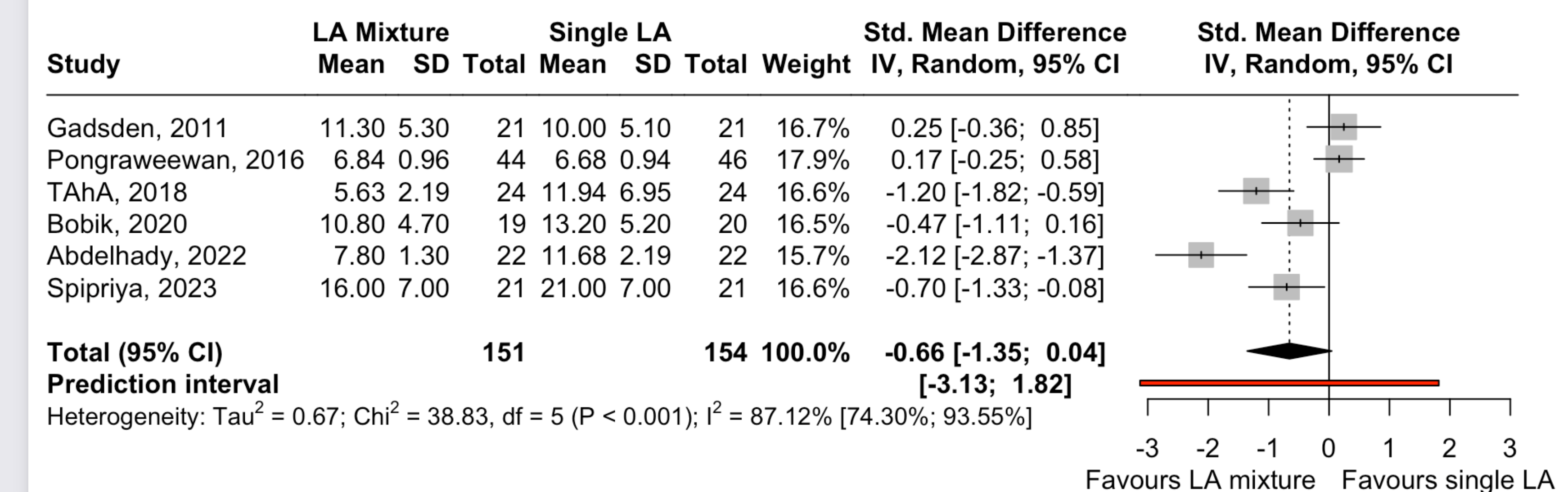


Figure 1 – Onset of sensory blockade

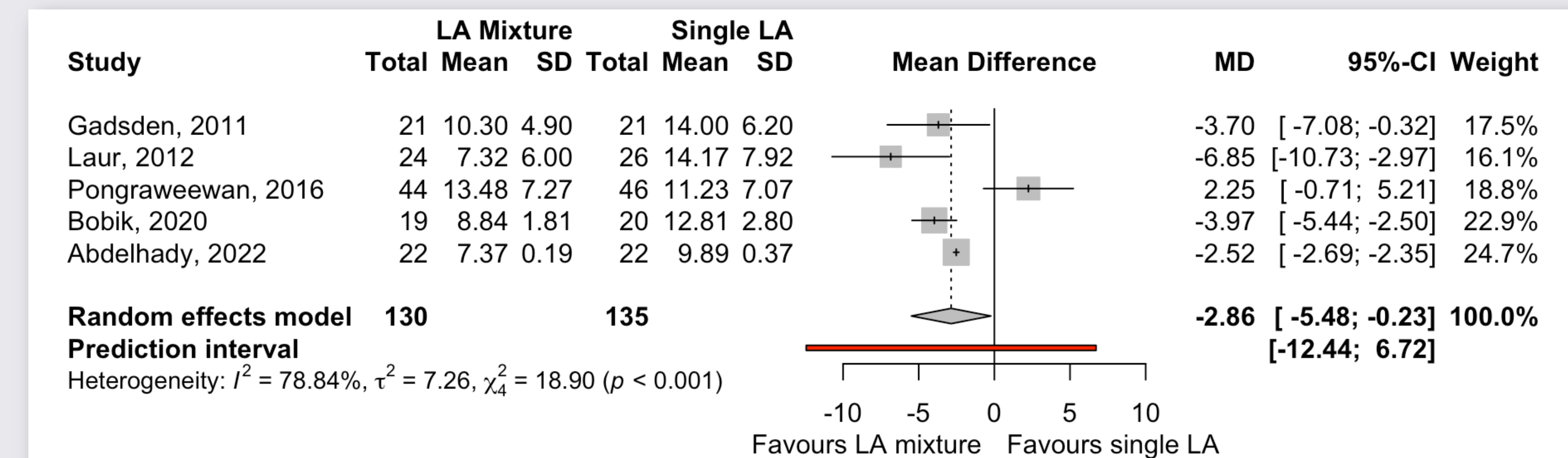


Figure 2 – Duration of sensory blockade

CONCLUSION

The findings from this meta-analysis do not support the use of LA mixture to reduce the onset time for sensory or motor block in regional anesthesia guided by ultrasound, while suggesting that the duration of analgesia and motor block is reduced by hours when a mixture of LA is administered. Interpretation of these findings should consider the large heterogeneity observed in studies, which may be due to different LA mixtures, LA mass, and type of block; also, the presence of studies with a high risk of bias should be noted.