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A pharmacodynamic evaluation of dexmedetomidine as an additive drug to ropivacaine for peripheral nerve blockade: A randomised, triple-blind, controlled study in volunteers.

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BACKGROUND: Previous data have indicated the efficacy of dexmedetomidine as an additive to peripheral regional anaesthesia. There are no pharmacodynamic data regarding the addition of dexmedetomidine to local anaesthetics for perineural administration.
OBJECTIVE: The objective of this study is to assess the dose-dependency of dexmedetomidine when injected with ropivacaine for peripheral nerve blockade.
DESIGN: A prospective, randomised, triple-blind, controlled study in volunteers.
SETTING: Department of Clinical Pharmacology, Medical University of Vienna.
PARTICIPANTS: Twenty-four volunteers.
INTERVENTIONS: All volunteers received an ulnar nerve block with 22.5 mg ropivacaine alone (R), or mixed with 50 (RD50), 100 (RD100) or 150 μg (RD150) dexmedetomidine.
MAIN OUTCOME MEASURES: The primary outcome was the duration of complete sensory block to pinprick and time to complete recovery of pinprick. Secondary outcomes included block success and onset time, motor block, haemodynamic parameters and

sedation level.

RESULTS: There was a significant dose-dependent ($P < 0.0001$) increase in the mean duration (SD) of sensory block with dexmedetomidine: R: 8.7 (1.5) h, RD50: 16.4 (4.0) h, RD100: 20.4 (2.8) h and group RD150: 21.2 (1.7) h. Sedation was also enhanced in a dose-dependent ($P < 0.001$) manner. Two volunteers each receiving 150 μg dexmedetomidine had postblock paraesthesia for 72 h.

CONCLUSION: Dexmedetomidine mixed with ropivacaine produces a dose-dependent prolongation of sensory block and clinically relevant dose-dependent sedation. Dexmedetomidine 100 μg may represent a balance between efficacy and sedation.

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