

# Does Hypersensitivity Occur After Axillary Brachial Plexus Block in Healthy Volunteers?

## A Mechanistic Study of Rebound Pain

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### INTRODUCTION

- Rebound pain, a sudden increase in pain after peripheral nerve block resolution, affects up to 50% of patients
- It is unknown whether rebound pain is simply an unmasking of untreated surgical pain or a *de novo* hyperalgesic state

### AIM

- Assess whether hyperalgesia occurs after a single-injection axillary brachial plexus block in healthy volunteers in the absence of surgical pain

### METHODS

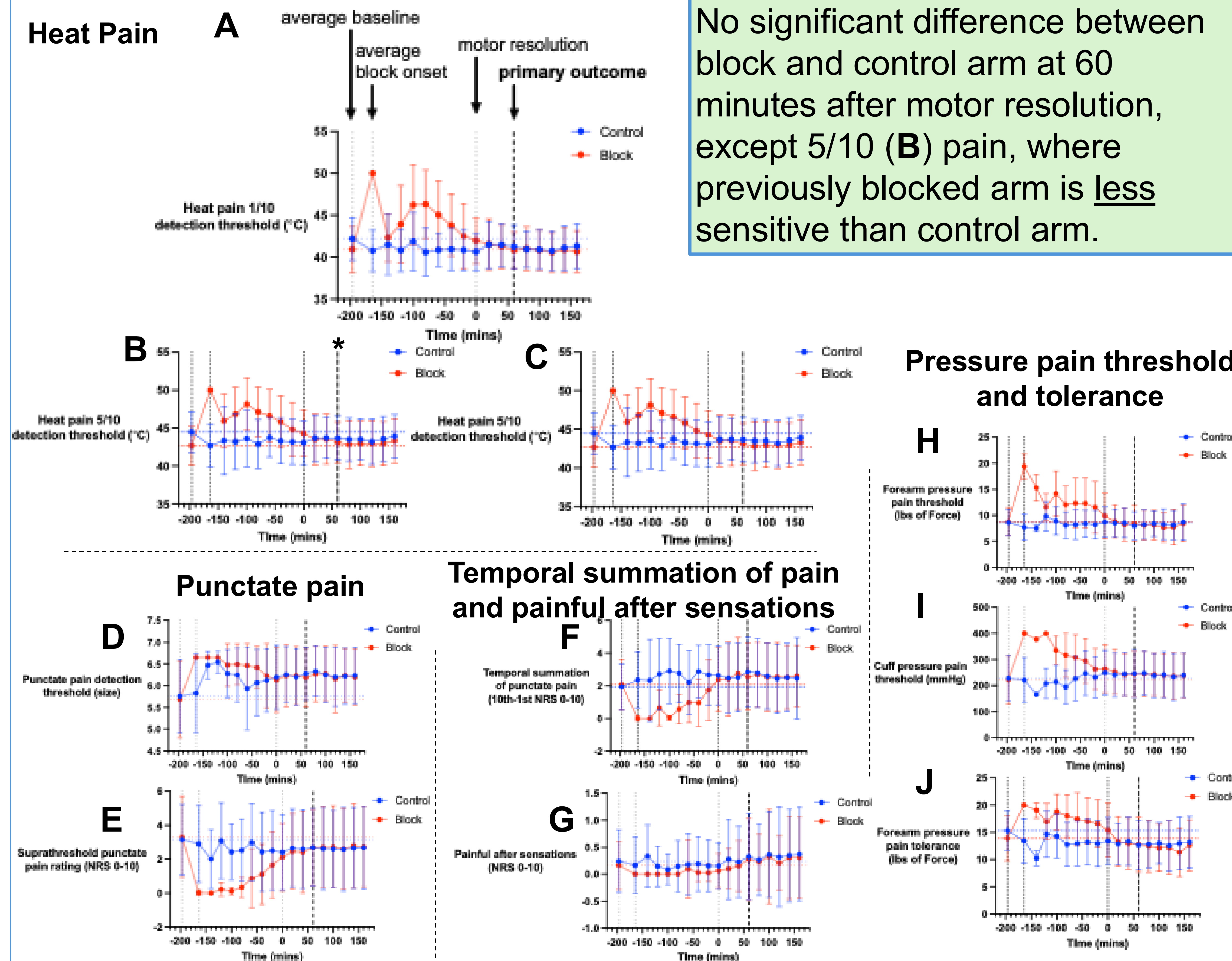
- Single-injection axillary brachial plexus block using mepivacaine 1.5% 15 cc (block arm), with contralateral unblocked arm as a control arm
- Quantitative sensory testing of pain at baseline, upon block onset, and then every 20 minutes after motor/sensory begins to return through 3 hours post-full motor block resolution

#### Pain Modalities tested

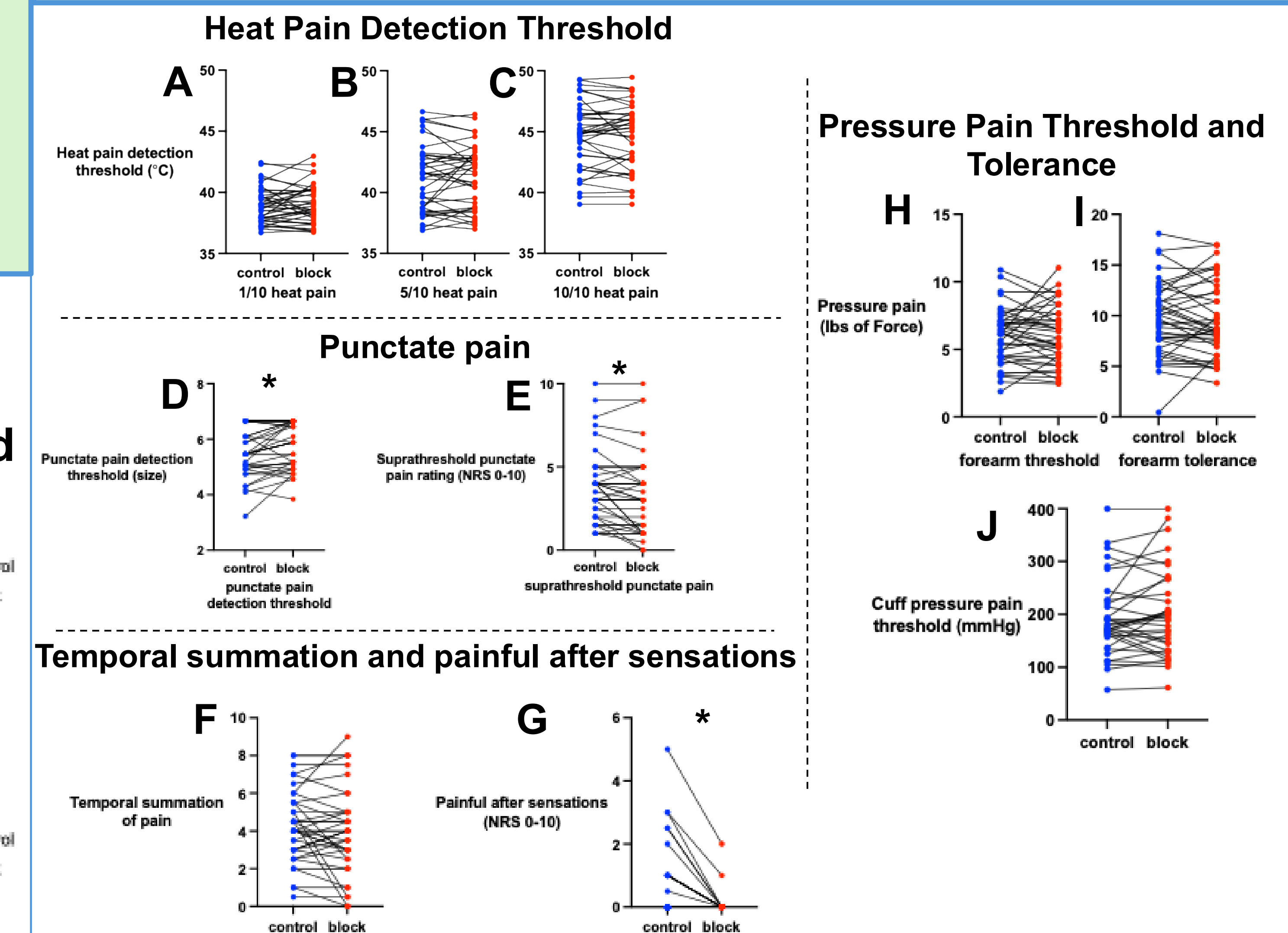
- Heat pain thresholds to detect 1/10, 5/10, and 10/10 pain
  - Primary Outcome:** Heat pain detection threshold 1/10 pain at 60 minutes post-motor resolution
- Punctate pain detection and suprathreshold pain ratings
- Temporal summation of pain and painful after sensations
- Pressure pain threshold and tolerance
- Exploratory Outcome:** extracted point of maximal sensitization at any time point during and up to 3 hours after motor resolution, compared between block and control arm
- Statistical analysis: paired t-test or Wilcoxon signed rank test based on normality (Shapiro-Wilk test)

### RESULTS

- 40 healthy volunteers completed the study
- Age 19-64 years old, 60% female



When examining maximally sensitized value at any time point during and up to 3 hours after nerve block resolution, blocked arm did not show evidence of hypersensitivity, compared to control arm. For some modalities, block arm was significantly less sensitive than control arm.



**CONCLUSION: No evidence of hypersensitivity during resolution of a single-injection axillary brachial plexus block when assessing heat, punctate and pressure pain and 3 hours after full motor block resolution.**