

Heated Lidocaine on Pain Reduction with Subcutaneous Infiltration

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BACKGROUND

Lidocaine use for numbing the skin and subdermal tissue is a big source of a patient’s pain and discomfort during an interventional pain procedure. Warming and buffering have been identified in the past as two potential methods of reducing pain on injection of a local anesthetic. Results from several studies examining pain reduction with warming and buffering both independently and together have been equivocal. This project was designed to determine if warming lidocaine for interventional pain procedures resulted in pain reduction and whether it is clinically significant enough to implement in our chronic pain patient population.

MATERIALS AND METHODS

An IVYX Scientific Digital Water Bath was used to heat bottles of lidocaine for the heated lidocaine portion of the study. Patients were randomly assigned to one of two procedure rooms using a randomizer for clinical trials app and assigned a study ID. One room used room temperature lidocaine, ranging from 17.5 – 18.5 degrees Celsius while the other room utilized heated lidocaine. The only exclusion criteria to this study was a lidocaine allergy. Lidocaine bottles were heated to 48 degrees Celsius in the water bath for a final temperature of >37 degrees Celsius on injection. After the initial injection with lidocaine, patients were asked to rate their pain on a scale of 1-10. A two-sample t-test was run on pain scores gathered from both the heated and room-temperature lidocaine groups.

RESULTS

WATERBATH TEMPERATURE

43 degree Celsius waterbath

	10 mL syringe Temp after 2 mins.
Trial 1	34.6
Trial 2	35.1
Trial 3	35.2

45 degree Celsius waterbath

	10 mL Syringe Temp after 2 mins.
Trial 1	35.3
Trial 2	35.5
Trial 3	35.8

47 degree Celsius waterbath

	10 mL syringe Temp after 2 mins
Trial 1	37.0
Trial 2	36.8
Trial 3	37.5

TWO SAMPLE T-TEST

	N	Mean	SD	SEM
Heated Lidocaine	42	3.060	2.346	0.362
Room Temperature Lidocaine	40	3.888	2.962	0.468

Table 1

A total of 83 patients were included in the study. The t-test results showed a mean score of 3.06 and 3.89 for the heated lidocaine group and room temperature group, respectively (P=0.16). The difference between the two mean scores is -0.828 (95% CI, -2.00 to 0.34).

DISCUSSION

Our results showed no difference between the heated lidocaine and room-temperature lidocaine groups. Our results did not attain statistical difference and future studies would require a larger sample size. The results from our study is consistent with previous studies that show equivocal results with some studies showing minor reduction in pain scores with heated lidocaine and other studies showing no difference. Studies that have used buffered lidocaine seemed to have better results. Future direction for this study includes increasing the sample size and considering buffered lidocaine with bicarbonate.

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