The impact of warmed local anaesthesia on patients with varying pain thresholds during oculoplastic surgery

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Introduction:

Injecting local anaesthetics (LA) is a routine procedure in oculoplastic surgery, but it can often cause considerable burning or stinging pain. Various strategies are used to alleviate the pain during LA administration.

In this study, we aimed to assess the impact of using warmed (38 °C) versus non-warmed (room temperature) LA on pain reduction in patients undergoing oculoplastic surgery.

Methods:

The study received local ethical approval under registration number MSKSS23-1578. We applied a within-subject crossover analysis framework,

Inclusion criteria:

1. Patients scheduled for bilateral oculoplastic surgery
2. The LA injection was given by the same surgeon to both eyes.

Exclusion criteria:

1. Patients undergoing sedation in addition to LA,
2. Patients with hearing disability
3. Patients with dementia

Equal amounts of 2% lignocaine with adrenaline (1:80,000) and 0.5% bupivacaine were used as the LA. The warmed LA was heated in a warmer for 15 minutes prior to administration. Each patient was randomly assigned to receive either warmed LA or non-warmed LA in the right eye, with the opposite type of LA in the second eye.



Primary outcome:

Pain was assessed immediately after the LA injection using a linear analogue pain scale ranging from 0 to 10.



Secondary outcomes:

During each injection, the lowest oxygen saturation, highest heart rate, and highest mean blood pressure (MAP) were recorded.

Results:

Forty patients participated.

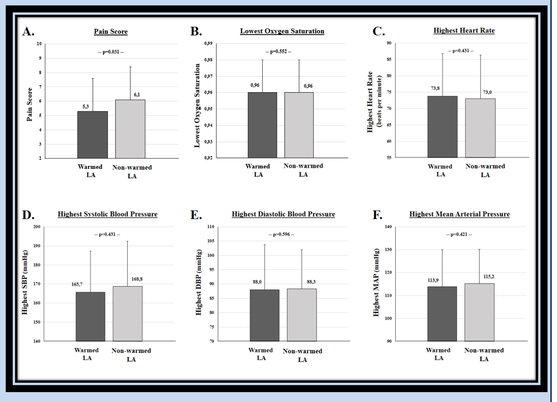
Primary outcomes:

1- Mean pain scores were 5.3 with warmed LA and 6.1 with non-warmed LA (p = 0.03). [Figure A]

2- Linear mixed model to adjust for confounders (sex, age, LA type injected first, presence of comorbidities and quantity of LA injected) showed estimated adjusted means of pain scores of 5.3 with warmed LA and 6.1 with non-warmed LA (p = 0.039)

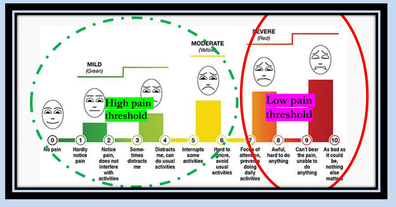
Secondary outcomes:

There was no difference in MAP or HR or oxygen saturation. [Figure B-F]



Subgroup analysis:

1- Dividing patients by the median non-warmed LA pain score (6.5) revealed a significantly greater benefit in those with a low pain threshold compared to those with a high pain threshold: 6.1 vs. 8.1 (p < 0.001).



2- Patients with a low pain threshold showed significantly higher heart rates (p = 0.032), higher diastolic BP (p = 0.016), and higher MAP (p = 0.048) with non-warmed LA compared to warmed LA.

Conclusion:

Warming LA is a simple and effective method to reduce pain and improve patients' experience during oculoplastic surgery.

Patients with a low pain threshold (high pain score) may benefit more from warmed LA, as indicated by the statistically significant different pain score between warmed and non-warmed LA in this group.