LAT (lidocaine-adrenaline-tetracaine) versus TAC (tetracaine-adrenaline-cocaine) for topical anesthesia in face and scalp lacerations

Ernst A A, Marvez-Valls E, Nick T G, Weiss S J

Record Status
This is a critical abstract of an economic evaluation that meets the criteria for inclusion on NHS EED. Each abstract contains a brief summary of the methods, the results and conclusions followed by a detailed critical assessment on the reliability of the study and the conclusions drawn.

Health technology
LAT (Lidocaine-Adrenaline-Tetracaine) and TAC (Tetracaine-Adrenaline-Cocaine) for topical anesthesia in face and scalp lacerations.

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
Patients with facial and scalp-based lacerations of 7 cm or less in length. The mean age of the patients in the LAT and TAC groups was 33 and 34 years respectively.

Setting
Hospital. The economic study was carried out in New Orleans, USA.

Dates to which data relate
The dates for effectiveness, resource and price data were not clearly specified but were presumably all 1994.

Source of effectiveness data
Single study.

Link between effectiveness and cost data
Costing was undertaken on the same patient sample as that used in the effectiveness study. It was not stated whether costing was undertaken prospectively or retrospectively.

Study sample
100 patients were initially recruited. Before analysis, 4 were excluded (3 TAC, 1 LAT) on account of requiring additional injected lidocaine, and were therefore considered treatment failures due to inadequate anesthesia. Another was excluded due to improper data collection. Patients were randomly allocated to treatments (via a random numbers table) and patients, and physicians performing wound closure, were also blinded to the solution being used. 48 patients received LAT, and 47 received TAC. Power calculations found that 95 study participants had a power of 0.8 to tell a ranked sum difference of 15.
Study design
The study was a double-blinded, randomised, controlled trial, with loss to follow-up of 4.2% (time scale unknown).

Analysis of effectiveness
It seems that the clinical study was based on treatment completers only. The primary health outcome was pain causing sutures. Patients had to state the number of sutures causing pain and patients and physicians had to note the overall pain of sutures using a standard visual analog scale (VAS). The results were assessed via Wilcoxon's ranked sum test.

Effectiveness results
LAT had significantly fewer painful sutures than TAC (interquartile ranges 0.13-0.0 (LAT) compared with 0.25 to 0 (TAC); P= 0.036) according to the patients' evaluations. The median number of pain causing sutures was 0 for both groups. However, the LAT mean ranked sum was 42.8. The TAC figure was 53.3. There was 1 wound infection in the TAC group and 1 (uninfected) haematoma.

Clinical conclusions
Topical anaesthetic LAT (4% lidocaine, 1:2000 adrenaline, 1% tetracaine) compared to TAC (0.5% tetracaine, 1:2000 adrenaline, 11.8% cocaine) was at least as effective and is a more practical treatment.

Measure of benefits used in the economic analysis
Reduced pain scores.

Direct costs
Only the costs of LAC and TAC were considered as all other costs were the same. Costs values were taken from a pharmacy in the US.

Currency
US dollars ($).

Sensitivity analysis
No sensitivity analysis was carried out.

Estimated benefits used in the economic analysis
The median LAT and TAC ratings for patients and surgeons were 0. Physician ranked sum ratings showed LAT to be more effective (P=0.0093, interquartile ranges 1 to 0 for LAT and 2 to 0 for TAC). Patient ranked figures were not statistically significant (P=0.266, interquartile ranges 1 to 0 (LAT) and 1 to 0 (TAC)). Weighted kappa statistics were used which found general agreement between physician and patient ratings for LAT versus TAC (73% overall agreement with a weighted kappa score of 64%).

Cost results
The cost per application for LAC was $3 and for TAC was $35. No discounting was stated.

Synthesis of costs and benefits
LAT was stated as the dominant strategy.
Authors’ conclusions
LAT was a non-controlled, and cheaper treatment than TAC (which registered measurable urine/blood cocaine levels), for topical anesthesia in scalp and facial laceration repair and was, at worst, equally effective.

CRD Commentary
There was no sensitivity analysis, no price dates and no detailed cost data. Good statistical analysis was performed on the effectiveness data. At the authors’ own admission, a lack of standardisation exists as to wound preparation methods and the type/size of suture to be used. Also issues such as adequate anesthesia time for wounds, adult-only trial inclusions, and physician and patient pain rating discrepancies may affect the results of the study.

Implications of the study
A full cost-effectiveness analysis, with adequate standardised preparation methods, sensitivity analysis, etc., is needed in order to substantiate the authors' claims concerning LAT treatment in comparison with TAC treatment.

Source of funding
Supported by a grant from the Louisiana State University Emergency Medicine Residency Grant Fund.

Bibliographic details

PubMedID
7893297

DOI
10.1016/0735-6757(95)90082-9

Indexing Status
Subject indexing assigned by NLM

MeSH
Adult; Anesthetics, Local /economics; Cocaine /administration & dosage; Double-Blind Method; Drug Combinations; Drug Costs; Epinephrine /administration & dosage; Facial Injuries /surgery; Female; Humans; Lidocaine /administration & dosage; Male; Pain /diagnosis /prevention & control; Pain Measurement; Prospective Studies; Scalp /injuries /surgery; Sutures; Tetracaine /administration & dosage; Wounds, Penetrating /surgery

AccessionNumber
21995000502

Date bibliographic record published
31/03/1998

Date abstract record published
31/03/1998