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SUPPORTIVE CLINICAL REFERENCES, ABSTRACTS AND JOURNAL ARTICLES
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SUPPORTIVE CLINICAL REFERENCES, ABSTRACTS AND JOURNAL

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Eplasty. 2018 Feb 7;18: e6. eCollection 2018.

Vapocoolant Anesthesia for Cosmetic Facial Rejuvenation Injections: A Randomized, Prospective, Split-Face Trial

Zeiderman MR, Kelishadi SS, Tutela JP, Rao A, Chowdhry S, Brooks RM[1], Wilhelmi BJ

Background: Minimally invasive cosmetic procedures are the most commonly performed aesthetic techniques by plastic surgeons. Patients are interested in a pain-free experience. Surgeons desire patient satisfaction and time-efficient utilization of office staff and resources. Clinical evidence exists for use of vapocoolant technology to reduce pain associated with IV cannulation in the pediatric population and in hemodialysis patients. Applying vapocoolant technology to facial rejuvenation is a novel approach to decrease pain associated with neurotoxin or filler injection.

Methods: A prospective randomized study was conducted testing 15 subjects receiving filler injections and another 15 patients receiving neurotoxin injections using a split-face model. The vapocoolant spray tested consisted of a 95/5 ratio of 1,1,1,3,3 Pentafluoropropane and 1,1,1,2 Tetrafluoroethane. Within each group, subjects received in random order either the injectable corresponding to their group alone as a control or the injectable used in conjunction with the vapocoolant spray. Therefore, each patient randomly received injection (filler or neurotoxin) alone versus injection (filler or neurotoxin) plus vapocoolant on an equivalent half of his or her face. An independent examiner recorded from each patient on a scale of 1-10 perceived pain for injection alone versus injection plus vapocoolant spray. Male and female English speaking/literate volunteers aged 22-65 whom were either naive to or had prior exposure to neurotoxin or filler injections were studied. Subjects enrolled in other clinical studies or having consumed any narcotic medications within 48 hours of participation were excluded.

Results: Vapocoolant spray at the time of cosmetic facial injections lead to a 59% decreased percent change in perceived pain score with neurotoxin injections (range 0-100% change) and 64% decreased percent change in perceived pain score with filler injections (range 0-100% change). These results were statistically significant. See attached histograms.

Conclusion: Vapocoolant spray reduces pain associated with facial rejuvenation procedure.

PMCID: PMC5809626
PMID: 29484087

Pain Management Nursing, 2017 Nov 16

Patient and Health Care Provider Responses from a Prospective, Double-Blind, Randomized Controlled Trial Comparing Vapocoolant Spray versus Placebo Spray in Adults Undergoing Venipuncture in the Emergency Department.

Tracy Barbour, Sharon O'Keefe, RN, BSN, Sharon E. Mace, MD, FACEP, FAAP

Abstract:
Painful medical procedures are common. Topical anesthetics are easily applied, rapid onset, inexpensive, and avoid injection pain and needlestick injury. The aims of this study, using patient and health care provider questionnaires, were to answer the following questions: (1) Does vapocoolant spray decrease venipuncture pain? (2) Would patients be satisfied with and use a vapocoolant spray in the future? (3) Would providers be satisfied with and use a vapocoolant spray in the future? Adults (18-80 years) in a hospital emergency department (ED) were randomly assigned to sterile water placebo spray (S) (N = 50) or vapocoolant spray (V) (N = 50) before venipuncture. Questionnaires were completed by patients undergoing venipuncture (N = 100) and the health care providers (N = 100) who performed the venipuncture (total questionnaires = 200) as part of a prospective, double-blind, randomized controlled trial comparing the efficacy and safety of vapocoolant spray compared with placebo spray in patients undergoing venipuncture in the ED. Patient and venipuncture variables were not significantly different for the two groups (S vs. V). Responses to the questionnaires were significantly different for the S versus V groups for both the patients and the health care providers. Patient questionnaires: Did you have less pain with spray? S 14%, V 76% ($p < .001$). Compared with previous blood draws, the spray was much more painful/more painful: S 10%, V 6%; same: S 76%, V 16%; less painful/much less painful: S 14%, V 78% ($p < .001$). How satisfied were you with the spray? Satisfied/very satisfied: S 20%, V 74% ($p < .001$). Would you use this spray in future? Yes S 20%, V 80% ($p < .001$). Provider results: The patient had less pain with the use of the spray: S 14%, V 78% ($p < .001$). How satisfied were you with the use of the spray? Satisfied/very satisfied: S 12%, V 82% ($p < .001$). Would you use this spray in the future? Yes S 24%, V 84% ($p < .001$). The use of a vapocoolant spray in adult ED patients undergoing venipuncture significantly decreased venipuncture pain, was associated with high patient and provider satisfaction, and both patients and providers would use a vapocoolant spray in the future for venipuncture and other painful procedures.

DOI: http://dx.doi.org/10.1016/j.pmn.2017.09.006

Scandinavian Journal of Pain, October 2017, Volume 17, 8-15

Prospective, double blind, randomized, controlled trial comparing vapocoolant spray versus placebo spray in adults undergoing intravenous cannulation

Mace, Sharon E.

HIGHLIGHTS:

· Vapocoolant spray significantly decreased the pain of intravenous cannulation.
· There were no complications or adverse events.
· Minor side effects that occurred in a few patients resolved quickly.
· No visible skin abnormalities were present 5 - 10 min after spray application.

Abstract:

OBJECTIVES: Painful diagnostic and therapeutic procedures are common in the health care setting. Eliminating, or at least, minimizing the pain associated with various procedures should be a priority. Although there are many benefits of providing local/topical anesthesia prior to performing painful procedures, ranging from greater patient/family satisfaction to increased procedural success rates; local/topical anesthetics are frequently not used. Reasons include the need for a needlestick to administer local anesthetics such as lidocaine and the long onset for topical anesthetics. Vapocoolants eliminate the risks associated with needlesticks, avoids the tissue distortion with intradermal local anesthetics, eliminates needlestick pain, have a quick almost instantaneous onset, are easy to apply, require no skills or devices to apply, are convenient, and inexpensive. The aims of this study were to ascertain if peripheral intravenous (PIV) cannulation pain would be significantly decreased by using a vapocoolant (V) versus sterile water placebo (S) spray, as determined by a reduction of at least ≥1.8 points on numerical rating scale (NRS) after vapocoolant versus placebo spray, the side effects and incidence of side effects from a vapocoolant spray; and whether there were any long term visible skin abnormalities associated with the use of a vapocoolant spray.

RESULTS: Patient demographics (age, gender, race), comorbidity, medications, and vital signs; and PIV procedure variables (e.g., IV needle size, location, number of IV attempts, type and experience of healthcare provider performing the IV) were not significantly different for the two groups. Median (interquartile range) PIV pain was 4 (2, 7) (S) and 2 (0, 4) (V) ($P < 0.001$). Skin checklist revealed minimal erythema: S 0% ($N = 0/150$), V: 2.7% (4/150), which resolved within 5 min, and no blanching, skin pigmentation changes, itching, edema, or ecchymosis. Photographs at 5–10 min revealed no visible skin changes in any patient ($N = 300$), vapocoolant ($N = 150$) or placebo groups ($N = 150$). Complaints ($N = 26$) were coolness/cold feeling S 8.7% ($N = 13$), V 7.3% ($N = 11$), coolness/numbness S 0% ($N = 0$), V 0.7% ($N = 1$), and burning S 0.7% ($N = 1$), V 0 (0%). Patient acceptance of the vapocoolant spray was high: 82% (123/150) of the patients stated they would use the spray in the future, while only 40.7% (61/150) of the placebo group stated they would use the placebo spray in the future.

CONCLUSIONS AND IMPLICATIONS: Vapocoolant spray significantly decreased peripheral intravenous cannulation pain in adults versus placebo spray and was well tolerated with minor adverse effects that resolved quickly. There were no significant differences in vital signs and no visible skin changes documented by photographs taken within 5–10 min postspray/PIV.

DOI: https://www.ncbi.nlm.nih.gov/pubmed/28850378

Practical Dermatology March 2017

A Prospective, Blinded Placebo-Controlled Evaluation of Pain Control Using A Vapocoolant Spray During Minor Office Procedures

Duraes EFR, Kortyka S, Moore F, Walzman JT, Zins JE, Mlynek K

Background: Vapocoolant sprays (skin refrigerants) are topical anesthetics that are known to efficiently reduce pain in a variety of clinical settings. This study investigated the efficacy of a skin refrigerant (Gebauer's Pain Ease®) in pain reduction during acrochordon removal in the office setting in a prospective, randomized patient blinded fashion.

Methods: A total of 34 healthy patients with bilateral acrochordons were recruited to assess the differences in pain level between skin refrigerant spray and placebo spray. Only patients with mirror image lesions were included. Lesions were alternatively sprayed with either the vapocoolant or placebo spray. Patients were randomized and blinded to the type of spray they received. They were asked to grade the pain level on a validated pain scale after each excision. Wilcoxon signed rank test was used to compare the pain level reported.

Results: Patients had a mean age of 60±13 years; 14(41.2%) were males and 20(58.8%) were females. The mean pain for Groups 1 (Vapocoolant) was 1.4 points (95% CI:-2.2, - 0.7) lower than for Group 2 (Control). Significantly lower pain was observed in Group 1 (p=0.001). In the sensitivity analysis, results from the paired t-test showed similar findings (p=0.001).

Conclusion: Vapocoolant sprays are convenient and effective tools to alleviate pain during acrochordon removal. Ease of administration, rapid anesthesia onset and low cost make the spray an excellent option for minor surgical procedures in outpatient setting.

A Prospective, Blinded Placebo-Controlled Evaluation of Pain Control Using A Vapocoolant Spray During Minor Office Procedures

https://www.ncbi.nlm.nih.gov/pubmed/28850378
CDC - VACCINE ADMINISTRATION *General Best Practice Guidelines for Immunization: Best Practices Guidance of the Advisory Committee on Immunization Practices (ACIP)*
Revised April 2017 (Page 90)

Methods for Alleviating Discomfort and Pain Associated with Vaccination

Comfort measures, such as distraction (e.g., playing music or pretending to blow away the pain), cooling of the injection site(s), topical analgesia, ingestion of sweet liquids, breastfeeding, swaddling, and slow, lateral swaying can help infants or children cope with the discomfort associated with vaccination (*35-37*). Pretreatment (30-60 minutes before injection) with a 5% topical lidocaine-prilocaine emulsion might decrease the pain of vaccination by causing superficial anesthesia (*38,39*). Evidence indicates that this cream does not interfere with the immune response to MMR (*40*). Topical lidocaine-prilocaine emulsion should not be used on infants aged <12 months who are receiving treatment with methemoglobin-inducing agents (e.g., acetaminophen, amyl nitrate, nitroprusside, dapsone) because of the possible development of methemoglobinemia (*41*). Use of a topical refrigerant (vapocoolant) spray immediately before vaccination can reduce the short-term pain associated with injections and can be as effective as lidocaine-prilocaine cream (*42*). Evidence does not support use of antipyretics before or at the time of vaccination; however, they can be used for the treatment of fever and local discomfort that might occur following vaccination. Studies of children with previous febrile seizures have not demonstrated antipyretics to be effective in the prevention of febrile seizures (*43*).

https://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/administration.html

Am J Emerg Med. 2016 May;34(5):798-804. doi: 10.1016/j.ajem.2016.01.002. Epub 2016 Jan 7.

Prospective, randomized, double-blind controlled trial comparing vapocoolant spray vs placebo spray in adults undergoing venipuncture.

Mace SE[1].

Author information

Abstract

INTRODUCTION: Topical anesthetics are used to decrease procedural pain such as venipuncture. Advantages of vapocoolants include rapid onset, ease of application, low cost, and lack of associated pain of injection and other needlestick-related risks. We hypothesized that the pain of venipuncture would be reduced by at least 1.8 points on a 10-point numerical rating scale after application of a vapocoolant compared with placebo.

METHODS: We conducted a prospective, randomized, double-blind controlled trial of vapocoolant vs placebo spray in 100 adults (ages 18-80) requiring venipuncture in a hospital emergency department or observation unit. The primary efficacy outcome was the difference in pain scores immediately after venipuncture, measured on a 10-point verbal numeric rating scale from 0 (none) to worst (10). Safety outcomes included local adverse effects (edema, erythema, blanching) and changes in vital signs (VS).

RESULTS: Patient characteristics and venipuncture procedure were not significantly different for the 2 groups. The median (interquartile range) pain of venipuncture was 3 (1.2-5) in the placebo group and 1 (0-3) in the vapocoolant group, $P < .001$. Skin checklist revealed the following: vapocoolant-minimal blanching 4%, minimal erythema 18% which resolved within 5 minutes; placebo-no visible skin changes. Photographs at 5 to 10 minutes revealed no visible skin changes in any patient. There were 2 complaints: "very wet and cold on skin" (placebo) and "felt burning on skin" (vapocoolant).

CONCLUSION: The vapocoolant significantly decreased venipuncture pain in adults compared with placebo and was well tolerated with minor adverse effects that resolved quickly. There were no significant differences in VS and no visible skin changes documented at the site by photographs taken within 5 to 10 minutes postspray/venipuncture.

TRIAL REGISTRATION: ClinicalTrials.gov NCT01712776.

PMID: 26979261 DOI: 10.1016/j.ajem.2016.01.002

Skin Sterility After Application of a Vapocoolant Spray Part 2.

Mlynek K[1], Lyahn H, Richards B, Schleicher W, Bassiri Gharb B, Procop G, Tuohy M, Zins J.

Abstract

INTRODUCTION:

Refrigerant sprays have been used for pain relief at the time of minor office procedures. However, their sterility remains in question. This study investigates the microbiologic effect of this vapocoolant when sprayed after 70 % isopropyl alcohol skin preparation.

MATERIALS AND METHODS:

In 50 healthy volunteers, three skin culture samples were collected: Group 1 prior to alcohol application; Group 2 after preparation with alcohol, and Group 3 after preparation with alcohol followed with vapocoolant spray. Samples were cultured in a blinded fashion and analyzed after 5 days of incubation. Gram staining was performed when cultures were positive.

RESULTS:

Bacterial growth was found in 98 % of samples prior to any skin preparation. This was reduced to 54 % after alcohol use (Group 2). Spraying with the skin refrigerant further reduced bacterial growth to 46 % (Group 3). The results showed a significant reduction in the number of positive bacterial cultures following skin preparation with alcohol and when alcohol prep was followed by vapocoolant spray ($p < 0.001$) compared to initial cultures. No statistical difference was observed between Groups 2 and 3 ($p = 0.74$).

CONCLUSIONS:

The use of the vapocoolant spray does not compromise the sterility of the skin following alcohol prep. Both 70 % isopropyl alcohol antiseptic preparation and skin preparation followed by vapocoolant spray significantly reduce skin colonization when compared to unprepared skin ($p < 0.001$).

PMID: 26044395 [PubMed – in process]

https://www.ncbi.nlm.nih.gov/pubmed/26044395

Plast Surg (Oakv). 2015 Summer; 23(2):71-6.

Microcirculatory effect of topical vapocoolants.

Galdyn I[1], Swanson E[2], Gordon C[2], Kwiecien G[3], Bena J[4], Siemionow M[5], Zins J[3].

Abstract

BACKGROUND:

Vapocoolant sprays are commonly used to minimize pain following minor interventions such as venipuncture, shave biopsy or needle insertion. Although these sprays have been widely used in clinical practice, little is known about their effect on microcirculation or cutaneous blood flow.

OBJECTIVE:

To evaluate the real-time effect of a topical vapocoolant using a well-established, rat cremaster muscle microcirculatory model, allowing direct measurement of changes in vessel diameter, capillary density and leukocyte behaviour.

METHODS:

Fifty rats were divided into a control and four experimental groups: group 1: 4 s spray with vapocoolant at 18 cm distance; group 2: 10 s spray at 18 cm distance; group 3: 4 s spray at 8 cm distance; and group 4: 10 s spray at 8 cm distance. Vessel diameters, capillary density and leukocyte behaviour were monitored for 1 h thereafter. Muscle was harvested for immunohistochemistry analysis of proangiogenic markers (vascular endothelial growth factor and von Willebrand factor), leukocyte behaviour markers (E-selectin, vascular cell adhesion molecule, intercellular adhesion molecule), pimonidazole-hypoxia staining and ApopTag (Millipore, USA) staining for apoptosis. Gene expression for inflammatory markers (interleukin [IL]-1β, IL-2, IL-4, IL-6, IL-10, tumour necrosis factor-alpha and interferon-gamma) was evaluated using polymerase chain reaction and myeloperoxidase assay for inflammation was performed.

RESULTS:

The use of refrigerant spray decreased vessel diameter and capillary density initially, although none of these decreases were statistically significant. Polymerase chain reaction showed no significant changes. The myeloperoxidase assay showed statistically significant increase in myeloperoxidase activity in groups 2, 3 and 4. Immunohistochemistry was negative for angiogenic and proinflammatory markers.

CONCLUSIONS:

The lack of statistically significant changes in vessel diameter and inflammatory markers corroborated the safety on microcirculation.

PMID: 26090345 [PubMed] PMCID: PMC4459411 [Available on 2016-06-01]

https://www.ncbi.nlm.nih.gov/pubmed/?term=Microcirculatory+effect+of+topical+vapocoolants

Dermatol Surg. 2014 Oct; 40(10):1103-7. DOI: 10.1097/01.DSS.0000452654.29636.56.

Skin sterility after application of a vapocoolant spray.

Schleicher WF[1], Richards BG, Huettner F, Ozturk C, Zuccaro P, Zins JE.

Abstract

BACKGROUND:

Refrigerant sprays have been widely used to reduce pain in the office setting. However, more recently, their use has been limited by both concern regarding flammability and questions of bacterial contamination.

OBJECTIVE:

We investigated the microbiological effect of 1,1,1,3,3 pentafluoropropane and 1,1,1,2-tetrafluoroethane when sprayed after povidone-iodine application in 50 volunteers.

MATERIALS AND METHODS:

In 50 volunteers, 3 cultures were taken (1) at time 0 before antiseptic application, (2) after povidone-iodine topical antiseptic, and (3) after spraying with vapocoolant. Cultures at 3 time intervals were analyzed in a blinded fashion, and Gram stains obtained when cultures were positive.

RESULTS:

Bacterial growth was found in 98% of cultures taken before antiseptic was applied (Group 1), in 28 cultures (56%) after povidone-iodine was applied, and in 24 cultures (48%) after spraying with vapocoolant. There was a statistically significant difference found between Group 1 (no antiseptic) and both Group 2 (after antiseptic but before vapocoolant) and Group 3 (after vapocoolant) ($p < .001$).

CONCLUSION:

The topical antiseptic povidone-iodine significantly reduces skin colonization when compared with unprepared skin ($p < .001$). The vapocoolant 1,1,1,3,3 pentafluoropropane and 1,1,1,2-tetrafluoroethane is sprayed on skin prepared with povidone-iodine; there is no statistically significant increase in bacterial colonization.

PMID: 25229779 [PubMed – indexed for MEDLINE]

https://www.ncbi.nlm.nih.gov/pubmed/25229779

Pediatr Emerg Care. 2013 Jan; 29(1):8-12. DOI: 10.1097/PEC.0b013e31827b214b.

Cryotherapeutic topical analgesics for pediatric intravenous catheter placement: ice versus vapocoolant spray.

Waterhouse MR[1], Liu DR, Wang VJ.

Topical refrigerant spray for pediatric

Abstract

OBJECTIVES:

Intravenous catheter placement is one of the most common sources of pain for children in inpatient settings. We sought to compare the efficacy of 2 cryotherapeutic treatments for this procedure: vapocoolant spray versus topical ice pack.

METHODS:

We prospectively enrolled 95 patients, aged 9 to 18 years, in a pediatric emergency department who required intravenous (IV) catheters as part of their treatment. Subjects were randomly assigned to receive vapocoolant spray or topical ice pack for 3 minutes, before IV catheter placement. Subjects completed visual analog scale (VAS) scores for 3 time points: baseline, pretreatment with ice or spray, and IV insertion. The principal investigator and 2 physicians viewing video recordings of the procedure also completed VAS scores for observed pain levels. Visual analog scale scores were compared using the Wilcoxon rank sum test.

RESULTS:

Although median VAS scores were similar, the change in VAS from baseline was of greater magnitude in the Pain Ease group, indicating that it may be more effective. More subjects in the Pain Ease group (76%) felt their treatment worked well, compared with 49% in the ice group. Physician-assigned VAS scores were lower and less variable than those of subjects. Most IV insertions were successful (83%).

CONCLUSIONS:

Vapocoolant spray may be more effective than ice as an analgesic for IV insertion. Subjects were more satisfied with vapocoolant spray. Neither agent caused a decrease in successful IV insertion rates.

PMID: 23283254 [PubMed – indexed for MEDLINE]

PMCID: PMC3985604

https://www.ncbi.nlm.nih.gov/pubmed/23283254

Journal of Athletic Training, 2012 May; 47(3)Supplement: S-91

Cold Perception, Surface, Subcutaneous and Intramuscular Temperatures Provided by Gebauer's Pain Ease® Topical Vapocoolant Spray.

Merrick MA, Martin KM.

CONTEXT:

Vapocoolant sprays rapidly cool the skin, providing brief local anesthesia for injections and intravenous cannulation as well as management of minor sports injuries and spray & stretch. Temperature effects in humans and effects of commonly used nozzle types, spray distances or spray durations have never been previously reported.

OBJECTIVE:

To describe cold perception and temperature effects of Pain Ease

DESIGN:

Crossover design

SETTING:

Research laboratory

PATIENTS OR OTHER PARTICIPANTS:

Convenience sample of 10 healthy participants (age =22.3 ± 1.9yrs)

INTERVENTIONS:

Pain Ease was applied to the proximal forearm under 8 experimental conditions on different days at least 48hrs apart. Conditions were determined using a 2x2x2 repeated measures factorial based on clinical use instructions. Independent variables were: nozzle type (mist & stream), spray duration (4 & 10 seconds) and spray distance (7.6cm [3 in] & 12.7cm [5 in]). Order of testing was determined using a balanced Latin Square.

MAIN OUTCOME MEASURES:

Ambient and interface temperature were measured using surface thermocouples. Subcutaneous and 1cm intramuscular temperatures were measured using sterile implantable thermocouples inserted via cannulae. Temperatures were recorded at 1sec intervals for 500sec. Cold severity perception was measured via 10cm Visual Analog Scale. Data were analyzed via repeated measures MANOVA with Sidak adjusted pairwise comparisons with α=0.05.

RESULTS:

Ambient (25.9 ± 0.4°C, p=0.79) and baseline temperatures (surface 31.1 ± 0.4°C, SubQ 34.0 ± 0.4°C, IM 34.5 ± 0.4°C, p=0.68) did not differ across conditions. Interface temperature fell to -11.4 ± 1.1°C and

re-warmed within 4-5 minutes. SubQ temperature fell to 28.1 ± 1.0°C. IM temperature fell to 33.1 ± 0.5°C. A main effect was observed for spray duration on cold perception (4sec = 3.9/10, 10sec = 5.9/10, p<0.001) and on lowest temperature at all 3 depths (surface 4sec = -9.4 ± 0.7°C, 10sec = 13.4 ± 0.4°C, p=0.001; SubQ 4sec = 30.5 ± 0.6°C, 10sec = 25.7 ± 0.5°C, p<0.001; IM 4sec = 33.5 ± .3°C, 10sec = 32.7 ± 0.3°C, p=0.05). A main effect for nozzle was observed on cold perception (stream = 4.1/10, mist = 5.7/10, p=0.003) and on lowest temperature at only surface (stream = -7.5 ± 0.6°C, mist = -15.4 ± 0.7°C, p<0.001) and SubQ depths (stream = 29.3 ± 0.5°C, mist = 26.9 ± 0.6°C, p=0.03). All 3 subjects receiving mist nozzle/5in/10sec had adverse skin reactions consistent with mild frostbite and the condition was terminated. Temperatures for it were -17.9 ± 1.4°C.

CONCLUSIONS:

Pain Ease cools skin to well below freezing regardless of application technique. This does not produce skin injury except in a single condition (mist, 5in, 10sec). Temperature changes at SubQ (~-5.9°C) and IM (~ -1.4°C) are small, short lived and may not be clinically meaningful. Mist nozzle produces much colder temperatures and feels colder regardless of spray distance or duration. Spraying for 10sec feels colder and is colder than 4sec. Spraying for 10 seconds with the mist nozzle should not be used clinically.

J Plast Reconstr Aesthet Surg. 2010 Sep; 63(9):1443-6. DOI: 10.1016/j.bjps.2009.07.045. Epub 2009 Aug 27.

Botulinum toxin injection pain relief using a topical anesthetic skin refrigerant.

Engel SJ[1], Afifi AM, Zins JE.

Abstract

BACKGROUND:

This study was performed to determine if pretreatment application of a topical anesthetic skin refrigerant reduced discomfort during botulinum toxin injection.

METHODS:

Twenty patients were assigned to four groups determined by side of the face pretreated with skin refrigerant and side receiving the first injection. On a Visual Analog Scale of 0-10 patients rated discomfort levels after injections in the glabellar complex with and without pretreatment.

RESULTS:

Mean discomfort rating for the pretreated side was 3.1, while the mean discomfort rating for the non-pretreated side was 4.5. Discomfort was not affected by the side sprayed (p=0.33) nor by administering the injection to the sprayed side first (p=0.37). The paired t-test revealed a significant difference between discomfort levels on the pretreated and non-pretreated sides (p=0.038) yielding a 95% confidence interval of (-2.71, -0.09).

CONCLUSIONS:

Topical anesthetic skin refrigerant significantly reduces discomfort in a cost-effective manner for reported by patients undergoing botulinum injections.

PMID: 19716355 [PubMed – indexed for MEDLINE]

https://www.ncbi.nlm.nih.gov/pubmed/19716355

Ophthal Plast Reconstr Surg. 2009 May-Jun; 25(3):173-7. DOI: 10.1097/IOP.0b013e3181a145ca.

Reduction of pain and anxiety prior to botulinum toxin injections with a new topical anesthetic method.

Weiss RA[1], Lavin PT.

Abstract

PURPOSE:

To evaluate the safety and efficacy of vapocoolants (topical skin refrigerants) to induce skin anesthesia and relieve patient anxiety and pain prior to cosmetic botulinum injections.

METHODS:

A paired (split-face) design was used in 52 patients where patient side (left vs. right) was randomized to receive either vapocoolant spray or no treatment control to test the study hypothesis of better anesthetic efficacy of vapocoolant spray versus no treatment control.
A pain and anxiety questionnaire was administered before, during, and after the injections.

RESULTS:

A considerable percentage of patients either expected pain (35% of naïve patients expected moderate pain) or had experienced pain from their prior treatment (35% had experienced moderate pain). Among naïve patients, 15% had moderate or severe anxiety and among experienced patients, 31% had moderate anxiety. Pain was a factor in delaying the scheduling of cosmetic botulinum toxin treatments in 19% of naïve patients and 31% of experienced patients. Pain reported from actual injections was higher than what was anticipated prior to treatment. There was a significant reduction in pain at injection sites treated with vapocoolant ($p < 0.001$, paired t test). Overall, 67% of all patients reported that the vapocoolant method had less pain than no anesthesia and 54% preferred vapocoolant for their next treatment. Overall, 6% of all patients would schedule their next botulinum toxin treatment sooner if vapocoolant were available.

CONCLUSIONS:

Vapocoolants represent a safe and effective means to reduce patient discomfort and anxiety before and during botulinum toxin type A treatments for glabellar area indications.

PMID: 19454924 [PubMed - indexed for MEDLINE]

https://www.ncbi.nlm.nih.gov/pubmed/?term=Reduction+of+Pain+and+Anxiety+prior+to+botulinum+toxin+injections+with+a+new+topical+anesthetic+method

CMAJ. 2008 Jul 1;179(1):31-6. DOI: 10.1503/cmaj.070874.

The effect of vapocoolant spray on pain due to intravenous cannulation in children: a randomized controlled trial.

Farion KJ[1], Splinter KL, Newhook K, Gaboury I, Splinter WM.

Abstract

BACKGROUND:

Established noninvasive pharmacologic means of alleviating pain and anxiety in children undergoing intravenous cannulation are time-consuming, and thus impractical for routine use in the emergency department. Vapocoolant sprays provide transient skin anesthesia within seconds of application. We compared the effect of a new vapocoolant spray to placebo on pain due to intravenous cannulation in children.

METHODS:

In this double-blind randomized controlled trial, which we conducted between June 1 and Sept. 12, 2006, 80 children aged 6-12 years received either vapocoolant spray or placebo before cannulation. Children rated their pain using a 100-mm colour visual analogue scale. Secondary outcomes included success rate on first attempt at cannulation and pain ratings by the children's parents, nurses and child life specialists.

RESULTS:

We found a modest but significant reduction in pain with the use of vapocoolant spray (mean difference 19 mm, 95% confidence interval [CI] 6-32 mm; $p < 0.01$). Cannulation on first attempt was more often successful with the use of vapocoolant spray (85.0%) than with placebo (62.5%) (mean difference 22.5%, 95% CI 3.2%-39.9%; $p = 0.03$). The number needed to treat to prevent 1 cannulation failure was 5 (95% CI 3-32). Parents ($p = 0.04$), nurses ($p = 0.01$) and child life specialists ($p < 0.01$) considered the children's pain to be reduced with the use of vapocoolant spray.

INTERPRETATION:

The vapocoolant spray in our study quickly and effectively reduced pain due to intravenous cannulation in children and improved the success rate of cannulation. It is an important option to reduce childhood procedural pain in emergency situations, especially when time precludes traditional interventions.

PMID: 18591524 [PubMed - indexed for MEDLINE] PMCID: PMC3267474

https://www.ncbi.nlm.nih.gov/pubmed/18591524