The author’s study demonstrates that application of EMLA cream to treatment sites significantly reduces needle pain during Botox administration. Twenty patients receiving 200 Botox injections in the glabellar area experienced a 60% reduction in pain in EMLA-pretreated sites compared with that in matched control sites. (Aesthetic Surg J 2004;24:79-81)

US Food and Drug Administration approval and widespread use of botulinum toxin A (Botox) for cosmetic facial applications has heralded a new era of nonsurgical office procedures. This injectable facial animation inhibitor, which is a valuable adjunct to surgical rejuvenation, is exceedingly effective and rapidly administered.

Because Botox requires percutaneous injection to reach desired muscle sites, patients may experience some pain and apprehension.1 Injections are frequently administered in the forehead and around the eyes, so some patients experience more sensitivity and anxiety than they do with injections in other facial or bodily areas. I evaluated the use of a topical anesthetic cream, Eutetic Mixture Local Anesthetics (EMLA) (Astra Pharmaceuticals, Westborough, MA), in reducing the discomfort of Botox injections.

**Patient Selection**

Twenty patients who had been previously treated with Botox forehead injections were selected as study subjects. Previously treated patients were chosen because they were more likely to have lower anxiety levels and could better evaluate injection pain. Patients reviewed and signed consent for study participation.

**Treatments**

Ten glabellar injections to the procerus and corrugator muscles were administered in each patient in a standard pattern. Five injection sites on 1 side of the face were pretreated with EMLA cream; 5 injection sites on the other side of the face were pretreated with a similar-appearing nonanesthetic cream, Kinerase (ICN Pharmaceuticals, Costa Mesa, CA). Patients were not told which side was being treated with the anesthetic cream. The topical agents were applied in a simple “spot” method at injection sites without the use of an occlusive dressing (Figure). The creams were allowed to dry for 30 minutes (until clear) before injections were administered. A total of 0.05 mL of Botox (2.5 μg/0.1 mL) was instilled in each injection site.

On the basis of the paired nature of the injections, patients were asked to not only grade each injection site (pain vs no pain) but also to grade which side of the matched pair was more painful. I conducted data analysis by first comparing paired injection sites on the basis of mean improvement and also by using a paired sign test to determine which side was less painful in each patient.

**Results**

Twenty patients receiving 200 injections were evaluated. On the left (control) side, 11 of 100 injections sites (11%; mean = 1.2, SD = .39) were rated as painless. On the right (experimental) side, 73 of 100 injection sites (73%; mean = 6.8, SD = .31) were rated as painless. When comparing the pain between the 2 sides (rather than at each injection site), all 20 patients (100%) reported a significant difference in pain control between the 2 sides, with the experimental side always better than the control side (P < .0001).

**EMLA vs Alternatives**

EMLA is a well-accepted topical anesthetic cream that has been used for diverse skin applications, including venipuncture and superficial surgery. This eutectic mixture of 2.5% lidocaine and 2.5% prilocaine (pH 9) pro-
duces cutaneous anesthesia through dermal penetration. The depth of the dermal anesthetic effect increases in accordance with how long the cream has been on the skin: After 60 minutes it is about 1 to 2 mm, and after 3 to 4 hours it may increase to 6 mm.2,3

Although a longer wait after application may offer greater dermal anesthesia, I chose 30 minutes as a practical interval for office administration. This was also the amount of time in which the creams lost their visibility through absorption and evaporation. Applied with a spot-application technique, EMLA cream is effective in improving the discomfort of Botox injections. Its effectiveness has been previously demonstrated in eyelid injections, although the application method was different.4 Applying a dot of EMLA cream at the site of a skin injection is easy, convenient, and inexpensive. A 5-g tube will likely provide enough cream for more than 25 patients.

Many other methods of decreasing the pain of Botox injections have been proposed. Using the smallest-gauge needle5 is an obvious intervention that, combined with a small-volume syringe, also helps ensure accurate administration. Although EMLA is traditionally used with occlusion when administered in larger volumes, the findings of this study demonstrate that occlusion is not necessary, particularly in injections with small-gauge needles. Reconstitution with an isotonic mixing solution (preservative-containing saline solution) and lowering of skin temperature with the use of various cooling methods (eg, ice, aerosol sprays) have also been shown to decrease injection discomfort.6,7 However, ice, in particular, is inconvenient to apply, and the pain control it affords is only partially effective.8

Other topical anesthetic preparations are available — among them ELA-Max (4% liposomal lidocaine; Ferndale Laboratories, Inc., Ferndale, MI); 4% tetracaine gel, and betacaine-local anesthesia ointment, but none of these has clearly demonstrated pain control superior to that of EMLA. That they are similar in effectiveness to EMLA for this application can be inferred but not proved with these findings.9-11

**Conclusion**

The use of EMLA cream is a rapid and effective method of decreasing pain during the percutaneous administration of Botox for aesthetic facial enhancement. Pain is reduced by more than 60% when EMLA is applied 30 minutes before treatment. Although injection pain is not eliminated, discomfort is clearly diminished. This finding will improve the acceptance of such intramuscular treatments, particularly in the apprehensive patient.

**References**


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