

### **Use of Diphenhydramine as an alternative to local anesthetics for patients with a known drug allergy**

I recently had a patient come into the emergency room with a known allergy to Xylocaine. The patient was a 92 year old female with a chief complaint of “lower left tooth pain for 2 weeks” was sent by her dentist because of her allergy. She was a poor historian and was unaware whether or not she was allergic to other anesthetics. Her allergy card was very old, and didn’t provide much information. Her husband had said that “she almost died” when she had the local administered many years ago. She said she has had dental work done with nitrous only. Relevant medical history included: hypertension and congestive heart failure.

I consulted the emergency physician for options and alternatives for treatment. The emergency physician recommended that we send her for allergy testing. We gave her carpules of xylocaine and Marcaine to be tested with, so we could get more information regarding the nature of her allergy. Considering her medical history, I didn’t think she would be a good candidate for sedation. I had heard of Diphenhydramine being as an alternative to lidocaine for dental anesthesia in the past and that’s why I chose to do my literature review on local anesthesia using diphenhydramine. I have read about it being used in dermatology for patients who are allergic to anesthetics, but I found the literature for its use in dentistry was very limited.

#### Introduction:

- True allergies to local anesthetics are rare. Usually simply adverse reactions which the patient relates to the time of injection. Most reactions are due to pharmacological, toxic or vasovagal effects.
- Diphenhydramine has been suggested, and used in the past as an alternative to local anesthetic for patients claiming allergies to anesthetics. Commonly used in dermatological procedures in patients with known allergies
- Local anesthetic properties of antihistamines were initially described in 1939 by Rosenthal and Minard
- Diphenhydramine (DPH; Benadryl) and Tripelenamine (pyribenzamine) have been used in the past
- Anesthetic properties of DPH has been attributed to its structural similarity with neural blocking agents.
- Antihistamines are used as an alternative to “caine” allergies for dermal anesthesia during repair of skin lacerations

- Limited number of studies for dental anesthesia

#### Review of Literature

- The first reported use of an antihistamine for local anesthetic purposes in dentistry was in 1961. In 1964 Campolattaro et al reported another successful case.
- In both instances a total of 15 mg. of diphenhydramine HCl was infiltrated locally and the teeth were successfully removed. There was no evidence of tissue irritation or sloughing in either report.
- Welborn and Kane reported the first series of mandibular blocks using 1% diphenhydramine HCl in combination with 1:100,000 epinephrine
- Results showed that onset of anesthesia was considerably longer with diphenhydramine than with 2% lidocaine-epinephrine, and a larger quantity of DPH was needed for satisfactory anesthesia.

#### Pharmacology

- Diphenhydramine is a potent antihistaminic agent which possesses anticholinergic, antiemetic and sedative effects.
- Available in capsule, liquid and injectable forms
- Diphenhydramine has vasodilating properties, excessive bleeding should be considered as a complication, although not reported.
- Adverse effects include droziness, confusion, nausea, or diplopia.

#### Case Report:

- Diphenhydramine HCl 10 mg/ml with 1:100000 epinephrine prepared
- For maxillary injections, 1.0-1.5 ml injected via local infiltration
  - Anesthesia was found to be profound enough to begin within 5 minutes, and lasted approximately 30 min.
- Less success found with Inferior alveolar nerve blocks. Longer onset (30) min for subjective and objective signs of anesthesia to arise.
- Multiple injections were necessary
- Case report of a patient receiving 50mg in an attempt to obtain anesthesia.
- In all cases the patient reported subjective symptoms of anesthesia, but in two cases (both mandibular extractions) anesthesia was not profound enough to allow removal of the offending tooth
- Often provokes burning sensation when being administered
- Post-operative tissue edema noted in various cases. (primarily in the mandible)
  - Swelling was minor and resolved within 3-4 days

- Post operative drowsiness was seen

#### Discussion

- True allergies to local anesthetics are rare
- DPH has been used as a local anesthetic in dentistry in doses of 15 to 50 mg
- DPH has a local irritating effect as well as localized edema and burning sensation
- Not as effective as conventional local anesthetics
- Recommended as a practical and economic alternative to local anesthetics for simple dental procedures including extractions
- It is an alternative to local anesthetics, but does not come without consequence. Care should be taken when administering the drug

#### Reference:

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2. Pavlidakey, Peter G et al. "Diphenhydramine as an alternative local anesthetic agent" *Journal of clinical and aesthetic dermatology* vol. 2,10 (2009): 37-40.