Everything You Didn’t Know About Local Anesthesia

Under One Roof 2014

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Disclaimer

We do not endorse any one product and have no affiliation with any product mentioned in this presentation.

Objectives

At the end of this course, attendees/participants will be able to:

1. Identify factors that influence the effectiveness of local anesthesia
2. Explain ways to reduce patient anxiety and pain
3. Describe how different anesthetic agents may provide a higher success rate
4. Choose appropriate techniques and anesthetics based on evidence

Overview

45/50 states allow dental hygienists to administer local anesthesia (LA)

Map of states in which hygienists administer LA: http://www.adha.org/resources-docs/7521_Local_Anesthesia_by_State.pdf

I. Factors that Influence LA Effectiveness
   a. Genetics
      i. May play a role in anesthesia failure. Future studies may use genome testing to improve LA efficacy by selecting the most useful agent.
   b. Red hair phenotype and IAN blocks
      i. Red-haired patients may be more difficult to anesthetize.
   c. Age
      i. Studies show elderly patients tolerate pain better than younger patients and elderly patients had a shorter onset time of anesthesia.
   d. Patients with alcoholism
      i. Patients with alcoholism who are not in recovery may be more difficult to anesthetize.
II. **Allergies and LA**  
   a. **Latex Stoppers**  
      i. No documented cases of latex allergy from the latex stopper for dental local anesthesia.  
   b. **Sulfites**  
      i. If a patient has a severe allergy to sulfites, use an anesthetic solution without a vasoconstrictor.  

III. **Anxiety**  
   a. Anxious patients  
      i. Patients with anxiety may be harder to anesthetize  
   b. Aromatherapy  
      i. Aromatherapy does not improve pain control  
      ii. Olfactory influences on mood and autonomic, endocrine and immune function.  
   c. **Needle Gauge**  
      i. Needle gauge does not matter in perception of pain.  
      ii. Size doesn’t matter: Needle gauge and injection pain associated with transmucosal anesthetic administration.  
      iii. **Broken Needles**  
         1. Occurs most in IA with 30 gauge needle and in children who move suddenly  
   d. Two stage injection  
      i. A two-stage injection may be helpful in reducing pain  
      ii. The effects of a 2-stage injection technique on inferior alveolar nerve block injection pain.  

IV. **Alternate Modes of Reducing Pain**  
   a. **Warming the solution**  
      i. Mixed studies. More research is needed.  
   b. **Cooling the injection site**  
      i. Studies look promising but more studies are needed to confirm positive effects of cooling  

V. **Maxillary Anesthesia**  
   a. PSA not needed due to high success rate of infiltration  

VI. **Articaine**  
   a. Available in the US since 2000 (Septocaine, Articadent, Zorcaine)  
   b. Amide, safe  
   c. Articaine may provide a higher success rate than 2% lidocaine
VII. New Products

a. Reversal agents
   i. Phentolamine mesylate (OraVerse™) is a safe and effective product to help reverse soft tissue anesthesia. Reduces the median time to recovery of normal sensation by 55%-62%.

b. Nasal spray
   i. “Kovacaine mist”—designed to anesthetize the maxillary arch, not circulated in bloodstream therefore less harmful to kidneys, liver and lungs, wears off quicker. No needle=less stress and anxiety.

c. Buffering solution
   i. Buffering local anesthetics does not seem to reduce the pain of injections.

References

Genetics


Red hair


Age


Alcoholism


Latex allergy


Sulfite allergy


Anxiety


Aromatherapy


Needle gauge


Two stage injection


Warming the solution


Cooling the injection site


Maxillary anesthesia


Articaine


Reversal Agents


Nasal Spray


Buffering Solution


Other


Malamed SF. Handbook of Local Anesthesia. 6th ed. 2014 Mosby Inc. St. Louis MO.