Kim I-J, Lee H-S, Ju H-J, et al: A cross-sectional study on the association between vitamin D levels and caries in the permanent dentition of Korean children. *BMC Oral Health* 18:43, 2018

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ENDODONTICS

Better analgesia during root canal treatment

BACKGROUND

Inferior alveolar nerve block (IANB) is a common local anesthetic technique used for root canal treatment in mandibular teeth. Its failure rate is just 15% in healthy teeth, but increases to 44% to 81% in teeth with acute irreversible pulpitis. The efficacy of various pain management strategies and supplemental anesthetic techniques and preoperative medications has been evaluated in various studies. A systematic review was done to evaluate the effectiveness of various interventions for pain relief during root canal treatment in lower molars with irreversible pulpitis.

METHODS

A review of the Cochrane Central Register of Controlled Trials (CENTRAL), Medline (PubMed), SCOPUS, and MEDLINE (Ovid) databases identified 17 studies suitable for analysis. A total of 1504 participants were covered, with each study comparing an experimental (supplemental) technique or techniques with standard interventions in IANB. The 17 studies were divided into 5 categories for the analysis, with some used in more than 1 comparison. Most measured the clinical success of IANB using lip numbness, but 5 used lip numbness plus a cold pulp test, and 2 used electric pulp testing. Pain measurement techniques also varied among the studies, with 13 using the Heft-Parker visual analogue scale, 2 using a verbal analogue scale, 1 using a visual analogue scale, and 1 using a verbal description of the pain experienced while having root canal treatment.

RESULTS

Standard interventions with IANB were compared to the following:

- Changing the techniques of local anesthetic injection
- Using a supplemental injection plus standard intervention
- Changing the features of local anesthetic
- Premedicating with nonsteroidal anti-inflammatory drugs (NSAIDs), acetaminophen, or a combination of acetaminophen and ibuprofen
- Performing supplemental infiltration with other local anesthetic agents, such as 2% articaine with 1:200,000 epinephrine, 4% articaine with 1:100,000 epinephrine, 30 mg mL^{-1} of ketorolac tromethamine, and 4 mg mL^{-1} of dexamethasone

Although no significant effect on pulp anesthesia resulted from changing the injection techniques or performing a supplemental injection compared to the standard treatment, changing the anesthetic features and increasing anesthetic volumes produced significantly higher rates of anesthesia compared to standard treatment. In addition, a significant increase in the success of anesthesia was obtained by premedicating with NSAIDs.

DISCUSSION

Increasing anesthetic volumes and premedicating with NSAIDs produced a predictable anesthetic results and greater pain control during endodontic treatment than the standard technique used for IANB.

Clinical Significance

Endodontists should consider using a couple of supplemental interventions to obtain better anesthesia for patients having root canal treatment in a lower molar with irreversible pulpitis. The best approach includes increasing the volume of anesthetic used and premedicating with NSAIDs.

Tupyota P, Chilertvanitkul P, Laopaiboon M, et al: Supplementary techniques for pain control during root canal treatment of lower posterior teeth with irreversible pulpitis: A systematic review and meta-analysis. *Aust Endod J* 44:14-25, 2018

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