Efficacy of Local Anesthesia

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Abstract
The purpose of this study is to compare the efficacy of various local anesthetic drugs. The main success of the treatment is totally dependent on the efficacy of the local anesthesia. A review is done by evaluating the various researchers done by various authors on the efficacy of drugs. A comparison is made with two local anesthetic agents or with various groups of drugs to evaluate the superior drug. The articles were taken in such a way it has a comparison with drugs or with the efficacy of various drugs. Eleven articles were chosen related to the efficacy and comparison of drugs. Each drug has its own use in the field of dentistry. The review showed that the efficacy of the drugs can be dealt only by comparing various local anesthetic drugs.

Methodology
The way through the review on efficacy of local anesthesia, the articles provided by the pubmed and the science direct revealed various articles. The articles were selected based only on the comparison of one drug over the other drug or with the group of drugs and the word efficacy in the article were chosen. Among many studies involved the first study was the efficacy of articaine formulations. In this quantitative reviews where twenty seven publications reported comparing the efficacy of 4% articaine with 2% lidocaine both with epinephrine. The final results were twelve publications showed significant differences among the anesthetic agents and twelve other showed no significant differences. One study did not analyse the results but finally the outcome was that articaine is somewhat superior when compared to lidocaine. A quantitative meta analysis done by comparing two articaine formulations. The analysis was the efficacy of articaine with epinephrine 1:100,000, epinephrine 1:200,000 and articaine without epinephrine. The final results reviewed that articaine with 1:100,000 or 1:200,000 epinephrine showed equal success rates. The other comparison was efficacy of articaine with 1:100,000 concentration of epinephrine and 1:200,000 epinephrine. The results were articaine with 1:100,000 concentration of epinephrine showed highest success rate.[2] Comparing the efficacy of diphenhydramine and prilocaine. In this study 23 subjects were taken among which 16 patients are allergic and 7 patients bare non allergic to local anesthesia served as a control groups. Patients allergic to local anesthesia is treated with diphenhydramine and the patients in control groups received prilocaine injection. Injection of local anesthesia and extractions were performed. The tooth mesial to the extracted tooth and the contralateral canine acts as a control which were tested using vitalometer for three times. Patients with diphenhydramine anesthesia showed post extraction pain in 7 of 16 patients and patient with prilocaine group showed pain in 4 of 7 patients. Adverse reactions were found only on the

Introduction
Local anesthesia is defined as loss of sensation in circumscribed area of the body caused by depression of excitation of nerve endings or inhibition of conduction process in peripheral nerves.[1] Local anesthetic solutions are utmost importance in the field of dentistry. The main use of the local anesthetic drug is that they eliminate pain. Various local anesthetic solutions are used based on their duration as short acting, intermediate acting and long acting drugs. Determination of local anesthesia in symptomatic tooth is literally uncertain. The main success of the local anesthesia is purely dependent on the duration of the action of the drug and the numbness felt by the patient after the injection of the drug.
patients with diphenhydramine injection such as edema, bleeding, nausea etc.[3]

The other study was pulpal anesthesia of four lidocaine solution injected with an intra ligamentary syringe. The four lidocaine solutions were 2% lidocaine with 1:100,000 epinephrine, 4% lidocaine with 1:100,000 epinephrine, 2% lidocaine with noradrenaline, 2% lidocaine with vasopressin 25IU% and nor adrenaline bitartarate. Forty volunteers were chosen 28males and 12 females ranging 14 to 35 years of age. Inclusion criteris was intact maxillary lateral incisors with periodontium following glickmans criteria. Each patient received injections on two homologous lateral incisor around 20 teeth. Pulse rate and blood pressure were recorded for every 2 minutes interval. In solutions of 1,2,3 the pulpal anesthesia was effective whereas in solution 4 showed delayed onset. The final result was that 2% lidocaine with vasoconstrictor 25IU% and noradrenaline has greater effect for shorter time than the other solutions tested.[4]

The other randomize study to compare the degree of pulpal anesthesia that were obtained in vital asymptomatic teeth using 1.8ml of diphenhydramine with 1:100,000 epinephrine, 1.8ml of 2% lidocaine with 1:100,000 epinephrine and 3.6ml of 2% lidocaine with 1:100,000 epinephrine combined with 1% diphenhydramine with 1:100,000 epinephrine in inferior alveolar nerve blocks. Thirty subjects participated and received each of three solutions at three separate appointments. Electric pulp testing is done and the final conclusions were 1% diphenhydramine solution should be used in caution for inferior alveolar nerve blocks but the combination lidocaine diphenhydramine solution showed post injection irritation which was not as effective when compared to lidocaine solution for pulpal anesthesia.[5]

Comparative evaluation of anesthetic efficacy of gowgates mandibular conduction anesthesia, vazirani akinosi technique, buccal plus lingual infiltrations and conventional inferior alveolar nerve anesthesia in patients with reversible pulpsitis. In this study 97 patients were selected and 25 patients received gowgates mandibular conduction block anesthesia, 24 patients received high vazirani akinosi inferior alveolar nerve blocks; 26 received infiltrations and 22 patients act as a control. The pain during the treatment is recorded using visual analog scale and the final results were found to be gowgates mandibular conduction anesthesia showed increased success rates when compared with conventional inferior alveolar nerve blocks in irreversible pulpsitis patients.[6]

The other comparative study on the efficacy of intraosseous injection and inferior alveolar nerve block in mandibular nerve block anesthesia in irreversible pulpsitis. In this study 30 subjects were assigned to receive intraosseous injection or inferior alveolar nerve block. Electric pulp testing is done to evaluate the pulpal anesthesia and the results were found to be intraosseous injection showed success rates in 13 of 15 patients and inferior alveolar nerve block showed success in 9 of 15 patients. The difference between two was not so significant. This study indicate that intraflow intraosseous injection can be used as primary anesthesia technique.[7]

A research on dexmedetomidine, morphine, propofol vs midazolam, morphone, propofol for conscious sedation in rhinoplasty under local anesthesia. 60 patients were taken for the study undergoing rhinoplasty under local anesthesia received sedation of dex group and or mid group with morphone and propofol. Pain was assessed using visual analog scale and the results concluded that dex group had no adverse effects and less pain when compared to mid group.[8]

A question that arises is articaine hydrochloride is safe alternative to lignocaine, a evidence based approach done which proved that articaine is the most safety effective and tolerated anesthetic drug for dental treatment when compared to lignocaine.[9] A controversy that articaine can be used in children? Articaine is 1.5times more potent when compared to lignocaine. Articaine has the ability to anesthesize the teeth upto first permanent molars.[10]

Does beta 2 adrenergic agonism affect the efficacy of local anesthesia. Comparison of local anesthesia containing beta 2 adrenergic agonism with adrenaline containing local anesthesia. The results were beta 2 adrenergic agonism does not flirt the efficacy of local anesthesia.[11]

Local anesthesia and opioids are the common drugs used in regional anesthesia. Three categories as local anesthetics (ropivacaine, levobupivacaine, mepivacaine), opioids (sufentanil), adjuvants (clonidine). Since many drugs are used in regional anesthesia the result was the best safety and efficacy drug is chosen.[12]

**Summary**

To determine the efficacy of local anesthesia the only motive is the comparison of drugs. Various views on above articles stated the superior drugs by comparison. Since the number of articles reviewed is insufficient to arrive at a conclusion, hope further future studies provide possible combinations of drugs so that a clear idea on the efficacy of local anesthesia can be determined.

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