Comparison of 4% articaine and 2% lignocaine in evaluating the efficacy during dental procedures in pediatric patients

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ABSTRACT

Background: Pulpectomy has also reported to be helpful for retained primary molars that aren't severed with significant malocclusion or increasing root resorption. The present study was conducted to compare 4% articaine and 2% lignocaine in evaluating the efficacy during dental procedures in pediatric patients.

Materials & Methods:48 pediatric patients with deep carious lesion were divided into 2 groups. In group I, 4% articaine was injected and in group II, 2% lignocaine was injected.Onset of action of anesthesia was assessed using a straight probe and checking it after 1.5, 2.5, 3.5 and 4.5 minutes. Dental procedure was performed and completed. The duration of action was again checked after 30, 45, 60 and 90 minutes of the local anesthetic administration. Pain was determined using VAS scale.

Results: Group I had 13 males and 11 females and group II had 12 males and 12 females. In group I and group II, onset of action at 2.5 min was seen in 8 and 0, at 3.5 min was seen in 10 and 14 and at 4.5 min in 6 and 10 patients in group I and II respectively. Duration of action at 60 min was seen in 13 and 0 and at 90 min in 11 and 24 patients in group I and II respectively. Pain score0 was seen in 16 and 12, 2 score in 8 each and 4 score in 0 and 4 patients in group I and II respectively. The difference was significant ($P< 0.05$).

Conclusion: It was discovered that lignocaine and articaine have similar potencies and physical characteristics.

Key words: articaine, lignocaine, Pulpectomy

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Introduction

Pulptherapy, described as "a conservative approach for prevention of premature loss of primary teeth," is helpful for anticipating insufficient room for erupting permanent teeth, loss of arch length, impaction, and tilting of premolars and molars.[1] However, pulpectomy has also reported to be helpful for retained primary molars that aren't severed with significant malocclusion or increasing root resorption.[2] In order to allow for natural tooth shedding or to

ensure long-term survival in the event of retention, an appropriate technique rather than an extraction is an acceptable treatment alternative.[3] However, after a non-restorable tooth that is recommended for extraction is removed, a space maintainer should be installed.[4]

In the United States and other countries, lignocaine, often known as lidocaine, is the most widely used local anesthetic for dental use. This anesthetic provides soft tissue numbness for 3-5 hours and pulpal anesthesia for roughly 1 hour.[5] The second-most popular dental anesthetic, articaine, was originally made available on the European market in 1976. By 2007, articaine was said to make up about 25% of overall sales, coming in second only to lidocaine at 54%.[6] In contrast to lidocaine and other amide local anesthetics, articaine has a special thiophene ring in its chemical makeup. This distinction supposedly explains its quicker onset and increased diffusion through the epineurium's lipid membrane via boosting lipid solubility.[7]The present study was conducted to compare 4% articaine and 2% lignocaine in evaluating the efficacy during dental procedures in pediatric patients.

Materials & Methods

The present study consisted of 48 pediatric patients with deep carious lesions, grossly decayed or pain on mandibular molarsof both genders. Parents gave their written consent to participate in the study.

Data such as name, age, gender etc. was recorded. In group I, 4% articaine was injected and in group II, 2% lignocaine was injected.Onset of action of anesthesia was assessed using a straight probe and checking it after 1.5, 2.5, 3.5 and 4.5 minutes. Dental procedure was performed and completed. The duration of action was again checked after 30, 45, 60 and 90 minutes of the local anesthetic administration. Pain was determined using VAS scale. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

Results

Table I: Distribution of patients

Groups	Group I	Group II
Agent	4% articaine	2% lignocaine
M:F	13:11	12:12

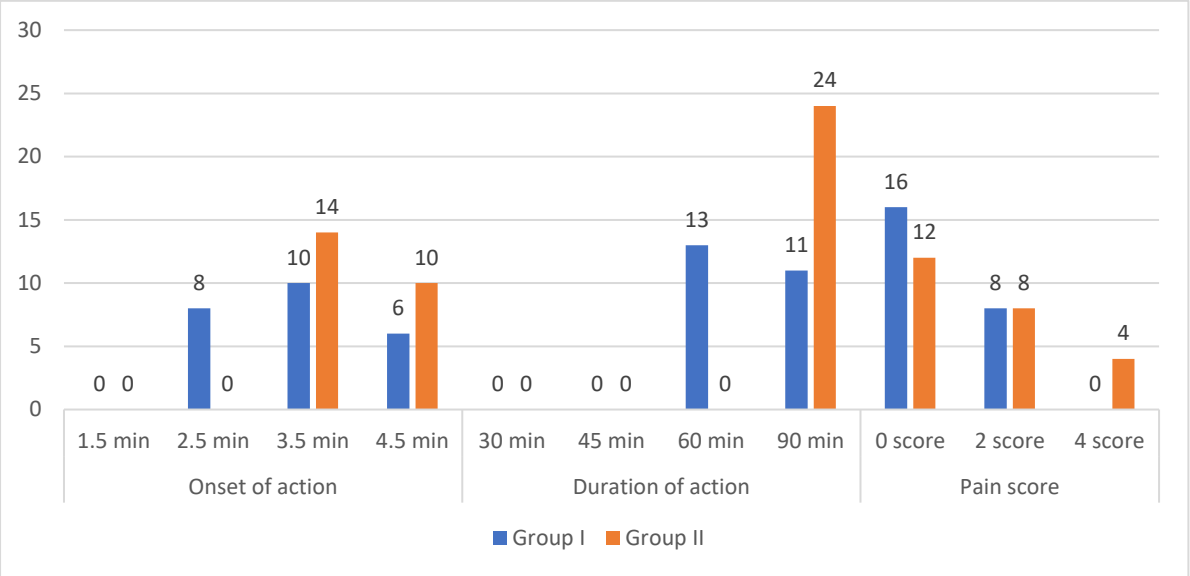
Table I shows that group I had 13 males and 11 females and group II had 12 males and 12 females.

Table II: Comparison of parameters

parameters	variables	Group I	Group II	P value
Onset of action	1.5 min	0	0	0.01
	2.5 min	8	0	
	3.5 min	10	14	
	4.5 min	6	10	
Duration of action	30 min	0	0	0.02
	45 min	0	0	
	60 min	13	0	
	90 min	11	24	
Pain score	0 score	16	12	0.04
	2 score	8	8	
	4 score	0	4	

Table II, graph I shows that in group I and group II, onset of action at 2.5 min was seen in 8 and 0, at 3.5 min was seen in 10 and 14 and at 4.5 min in 6 and 10 patients in group I and II respectively. Duration of action at 60 min was seen in 13 and 0 and at 90 min in 11 and 24 patients in group I and II respectively.Pain score0 was seen in 16 and 12, 2 score in 8 each and 4 score in 0 and 4patients in group I and II respectively. The difference was significant (P< 0.05).

Graph I: Comparison of parameters



Discussion

Subjective and objective tests are used to make a clinical diagnosis of symptomatic irreversible pulpitis.[8]The critical inflamed pulp cannot heal, according to scientific studies, and subjective descriptors such persistent heat pain, spontaneous pain, andreferred pain.[9] For teeth with irreversible pulpitis and symptomatic apical periodontitis, root canal therapy has been reported to be much more painful than for teeth with necrotic pulps and asymptomatic apical periodontitis.[10] Furthermore, in these circumstances, obtaining substantial pulpal anesthesia can be difficult. For instance, anesthetic might be strong enough to access the pulp chamber, but canal instrumentation might cause excruciating agony.[11]The present study was conducted to compare 4% articaine and 2% lignocaine in evaluating the efficacy during dental procedures in pediatric patients.

We found that group I had 13 males and 11 females and group II had 12 males and 12 females. Wani et al[12] in their study compared and evaluated the efficacy of 4% articaine and 2% lignocaine in reducing pain while performing dental procedures in pediatric patients. A spilt mouth technique was conducted on 25 subjects aged 3-6 years, Topical application of local anesthestic spray followed by 4% articaine infiltration on one side and 2% lignocaine on other. Post treatment pain was assessed using visual analog scale. Statistically significant results were obtained while comparing pain, duration and onset of action of 4% articaine and 2% lignocaine

We found that in group I and group II, onset of actionat 2.5 min was seen in 8 and 0, at 3.5 min was seen in 10 and 14 and at 4.5 min in 6 and 10 patients in group I and II respectively. Duration of action at 60 min was seen in 13 and 0 and at 90 min in 11 and 24 patients in group I and II respectively. Pain score0 was seen in 16 and 12, 2 score in 8 each and 4 score in 0 and 4 patients in group I and II respectively. Kung et al[13] studied both lidocaine and

articaine, articaine was more likely to produce effective anesthesia (odds ratio [OR], 2.21; 95% CI, 1.41-3.47; P =.0006; I(2) = 40%). There was no discernible difference between articaine and lidocaine in the examination of the maxillary infiltration subgroup (OR, 3.99; 95% CI, 0.50-31.62; P =.19; I(2) = 59%). Articaine outperformed lidocaine in studies comparing combined mandibular anesthesia (OR, 2.20; 95% CI, 1.40-3.44; P =.0006; I(2) = 30%), but mandibular block anesthesia did not vary (OR, 1.44; 95% CI, 0.87-2.38; P =.16; I(2) = 0%). Articaine was substantially more efficacious than lidocaine when used as additional infiltration following successful mandibular block anesthesia (OR, 3.55; 95% CI, 1.97-6.39). Malamed et al[14] concluded the overall incidence rates of adverse events in the study for articaine and lignocaine of which 0.7% was hypoesthesia, 0.9% parasthesia, 0.55% headache, 0.3% rash and pain and 0.45% infection.
The limitation the study is small sample size.

Conclusion

Authors found that lignocaine and articaine have similar potencies and physical characteristics.

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