To Assess Dentist Knowledge About Lipid Treatment of Local Anesthetic Systemic Toxicity

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Abstract

Background: The present study was conducted to assess dentist knowledge about lipid treatment of local anesthetic systemic toxicity.

Materials & Method: This study was conducted on 260 dentists of both genders. All were provided with a questionnaire. Information regarding LAST, signs of LAST they encountered and treatments for LAST, the length of professional experience, training on local anesthesia, LAs used most often, side effects seen most often were recorded.

Results: Out of 260 dentists, 140 were male and 120 were female. 0-5 years experience was seen in 20, 5-10 in 70, 10-15 years in 50 and >15 years in 120 dentists. The difference was significant (P< 0.05). 62% had no idea of lipid treatment, 23% had heard but did not have enough knowledge of it, 13% had read an article about lipid treatment and 2% knew how to use lipid treatment. The difference was significant (P< 0.05). 85% had never seen LA toxicity, 12% had not use lipid treatment in local anesthesia toxicity and 3% had use lipid treatment in local anesthesia toxicity. The difference was significant (P< 0.05).

Conclusion: Authors suggested that dentists must be aware of LA toxicity and knowledge of how to treat it.

Key words: *Knowledge, LAST, local anesthetic*

Introduction

An ideal local anesthetics should be potent, reversible, low cost, stable, and easy to metabolize and emit. Furthermore, it should have rapid onset action, suitable duration of effect, and good tissue penetration. Another one of the important qualifications is that there should be no adverse effect, neither local nor systemic.[1] Complications due to local anesthesia can be divided into three major areas; complications associated with vasoconstrictor, needle, and absorption of local anesthetics. Complications associated with the added vasoconstrictor include elevated blood pressure and increased heart rate. Another complications associated with the needle include syncope, hematoma, pain, edema, infection, paresthesia, nerve paralysis, and breakdown of needle or cartridge. Absorption of the local anesthetics includes local reaction, idiosyncrasy, toxicity, and allergy or anaphylactic reaction.[2]

All amidetype LAs can cause local anesthetic systemic toxicity (LAST), and in addition, risk of cardiovascular system (CVS) and central nervous system (CNS) toxicity is still a major problem. LAST is a very serious condition that can cause death.[3] In LAST, blood levels of LAs exceed the maximum dose, usually as a result of multiple injections of the anesthetic or accidental injection into a vein. If the level of LA in the blood reaches an individual's maximum dose, LAST may occur. LAs are the drugs most often used by dentists, and although dentists may encounter few adverse events, this does not change the fact that LAST can occur. Overdose, anatomy, and other patientspecific factors can contribute to LAST. Intravascular injection

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has been reported in 15.3% of cases when the inferior alveolar nerve block is targeted.[4] The present study was conducted to assess dentist knowledge about lipid treatment of local anesthetic systemic toxicity.

Material & Method

This study was conducted in the department of Oral Surgery. It comprised of 260 dentists of both genders. All were informed regarding the study and written consent was obtained. Ethical clearance was obtained prior to the study.

Data such as name, age, gender etc. was recorded. All were provided with a questionnaire. Information regarding LAST, signs of LAST they encountered and treatments for LAST, the length of professional experience, training on local anesthesia, LAs used most often, side effects seen most often were recorded. Results were subjected to statistics. P value less than 0.05 was considered significant.

Table I Distribution of patients

Gender	Males	Females
Number	140	120

Table I shows that out of 260 dentists, 140 were male and 120 were female.

Table II Experience of dentists

Experience (Years)	Number	P value
0-5	20	0.01
5-10	70	
10-15	50	
>15	120	

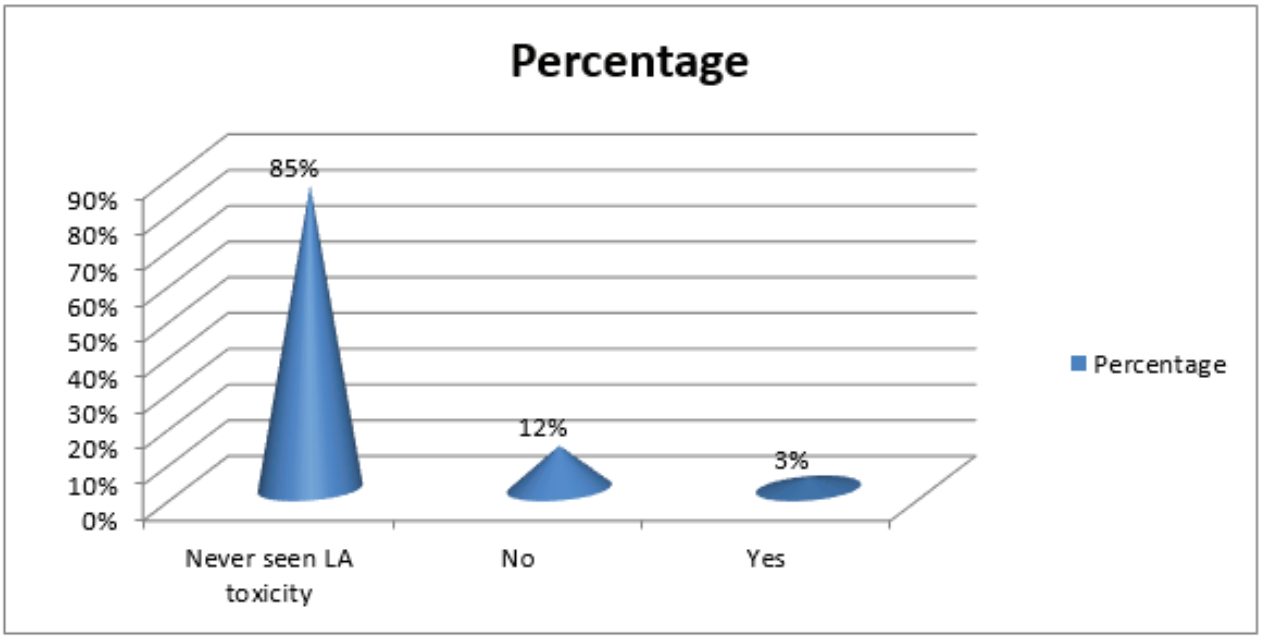
Table II shows that 0-5 years experience was seen in 20, 5-10 in 70, 10-15 years in 50 and >15 years in 120 dentists. The difference was significant (P< 0.05).

Table III Do you know lipid treatment in local anesthesia toxicity?

Answer	Percentage	P value
No idea of lipid treatment	62%	0.02
Had heard but did not have enough knowledge of it	23%	
Knew how to use lipid treatment	2%	
Had read an article about lipid treatment	13%	

Table III shows that 62% had no idea of lipid treatment, 23% had heard but did not have enough

knowledge of it, 13% had read an article about lipid treatment and 2% knew how to use lipid treatment. The difference was significant (P< 0.05).



Graph I: Have you ever use lipid treatment in local anesthesia toxicity?

Graph I shows that 85% had never seen LA toxicity, 12% had not use lipid treatment in local anesthesia toxicity and 3% had use lipid treatment in local anesthesia toxicity. The difference was significant (P< 0.05).

Discussion

LAST refers to the complication particularly affecting the central nervous system (CNS) and cardiovascular system (CVS) due to the overdose of local anesthetics. LAST is a life-threatening complication and reportedly occurs in 0.03% people.[5] To elaborate, the order of incidence of complications from highest to lowest based on the type of block is penile, local infiltration, neuraxial, upper extremity, paravertebral, lower extremity, head and neck, topical, transversus abdominis plane, and intravenous block. Penile blocks are most commonly associated with complications, because of the large distribution of blood vessels. This is followed by local infiltration, which is commonly used in dentistry.[6] The order of incidence of complications from highest to lowest according to the local anesthetics used is bupivacaine, lidocaine, ropivacaine, mixture local anesthetics, levobupivacaine, chloroprocaine, and articaine. Lidocaine, the most commonly used anesthetic in dentistry, accounted for approximately 25% of complications reported. The high incidence of complications of lidocaine, which is comparative safe, could be due to its high frequency of use.[7] The present study was conducted to assess dentist knowledge about lipid treatment of local anesthetic systemic toxicity.

In this study, out of 260 dentists, 140 were male and 120 were female. 0-5 years experience was seen in 20, 5-10 years in 70, 10-15 years in 50 and >15 years in 120 dentists. Vijayalakshmi et al[8] have described the toxicity caused by overdose of local anesthetics during dental treatments and the pharmacokinetic progression, and reported the importance of drug selection and safety levels of the drugs.

We found that 62% had no idea of lipid treatment, 23% had heard but did not have enough knowledge of it, 13% had read an article about lipid treatment and 2% knew how to use lipid treatment. 85% had never seen LA toxicity, 12% had not use lipid treatment in local anesthesia toxicity and 3% had use lipid treatment in local anesthesia toxicity.

Basaranoglu et al[9] administered 600 questionnaires that asked about the frequency with which dentists encountered LAST and the symptoms of LAST and its treatment, especially with lipids. The results showed that 520 (86.66%) respondents had never seen LAST, and 404 (67.3%) had no idea about lipid treatment. In addition, 128 (21.3%) had heard about lipid treatment but had inadequate knowledge of it and 59 (9.8%) had read an article about lipid treatment, but only 9 (1.5%) knew how to use lipid treatment. Finally, 80 (13.33%)

participants had seen LAST but had used a treatment other than lipids.

Guzmán et al[10] in their study interviewed anesthetists at hospitals about their knowledge and use of lipid therapy for LAST. Results showed that 50% of the anesthetists knew about lipid therapy and had adequate information to use it correctly. However, it also found that they did not know how to obtain lipids and that lipid solutions were not kept in locations where local anesthesia was administered.

Conclusion

Authors suggested that dentists must be aware of LA toxicity and knowledge of how to treat it.

Conflicts of Interest: The authors declare that there is no conflict of interest regarding the publication of this paper.

Source of Funding: Self

Ethical Clearance: Ethical clearance has been taken from Institutional Ethical Committee

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