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**KNOWLEDGE, ATTITUDE AMONG THE PROSTHODONTIC POSTGRADUATE
STUDENTS AND STAFF ABOUT ANAPHYLACTIC REACTION BY LOCAL
ANESTHESIA DURING TOOTH PREPARATION PROCEDURE**

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ABSTRACT

Aim: To assess the knowledge, attitude of prosthodontic post graduate students and staff about anaphylactic reaction seen in patients after administration of local anesthesia during tooth preparation.

Method: A questionnaire based study was conducted among the post graduate students and staff. About 300 questioners were prepared and distributed among the PG students and staff of rajarajeswari dental college, division of prosthodontics. Two counselors were nominated for distribution and motivation of participants to fill the form and collect the filled forms after one week time or earlier.

Results: Eighteen postgraduate students and fifteen staffs responded to the questionnaire. The results indicated that the majority of the participants had knowledge of one or more symptoms relating to anaphylaxis. However, none of the participants demonstrated that they knew about all

symptoms relating to anaphylaxis. Only few had experience of managing the anaphylactic reaction. About 75% of PG students and staff knew about the emergency drug but about only 40% of them knew the technique of use of it.

Conclusion: Local Anesthesia is used for vital tooth preparation during fixed Prosthodontic procedure and anaphylactic reaction from it can happen anytime with any patient putting life on risk. To deal with such situation good knowledge and serious attitude is necessary. This study has revealed the lack of knowledge among students and staff about anaphylactic reactions and their attitude towards management which needs to be enhanced to prevent severe consequences on health and safety of common people seeking fixed Prosthodontic treatment.

Keywords: Anaphylaxis, Emergency drugs, Local Anesthesia, Survey

INTRODUCTION

According to WHO anaphylaxis is defined as a severe, life threatening systemic hypersensitivity response which is characterized by an acute onset of potentially life threatening airway, breathing or circulatory problems. Anaphylaxis is an immunological response to the allergen involving immunoglobulin E (IgE) that activates basophils and mast cells, to release vasoactive inflammatory mediators such as leukotrienes, histamine, prostaglandins and tryptase. It is a generalized response related to cutaneous, respiratory, and cardiovascular or GI Symptoms. It may involve state of anxiety and confusion along with feeling of warmth and itching that may lead to urticaria and inflammation of bronchi and larynx¹. Onset of symptoms means that there will be more severe response to allergen. The incidence of death related to anaphylactic reaction is

mostly due to obstruction of respiratory tree or the collapse of circulation or both [2]. A study determining the incidence of anaphylaxis in south Asia (Pakistan, India and Bangladesh), found that the incidence rate among south Asians was 58.3% cases per 100000 persons/year [3]. The most common trigger which can cause anaphylaxis includes food, latex, certain medications including LA agents and insect sting [4]. Patients reporting to dental set up are at risk of developing anaphylactic reaction as they normally receive LA during fixed prosthodontic routine procedures [5]. The LA agents are either of amide or ester group depending upon the linkage and ester group is more sensitive to cause anaphylaxis, mostly owing to the p-amino benzoic acid; a breakdown product [6, 7]. The additive and preservatives in LA can also be the offending agent [8]. Proper history

record and certain preprocedural tests can be performed to prevent the allergic reaction like skin prick test in which small amount of anesthesia if deposited intradermally and response is noted prior to administration of prescribed dose [9]. The symptoms of anaphylaxis are very unpredictable and can differ from one individual to another so the treating dentist should have a sound knowledge of the mechanism, presentation and management of anaphylaxis as lack of training and failure to manage this medical emergency may lead to serious consequences and litigation. Thus to diagnose medical issues particularly the anaphylactic response, dental surgeon must have suitable understanding of the probable reaction of the allergens [10, 11].

The objective of this study is to assess the knowledge and attitude of PG students and staff practicing in post graduate teaching hospital of regarding the anaphylactic reaction after LA administration. In different studies and countries, knowledge and attitude of dentists has been assessed regarding anaphylaxis which shows need for improvement in both avenues. Literature also revealed that no such studies have been conducted in and around Bangalore, India regarding knowledge and attitude about anaphylactic reaction and its management.

MATERIAL AND METHOD

This study was carried out among the staffs and PG students in division of prosthodontics teaching hospital. The duration of study was about six months from April to September 2023. A questionnaire to gather the information was prepared. It included the information about the PG students and staffs, their experience, knowledge and their attitude to handle the anaphylactic reaction. The questionnaire was distributed and a senior counselor dentist working in the teaching hospital was selected for the distribution and collection of questionnaires. Total 300 questionnaires were distributed and were collected back after 1 week time. All eighteen PG student and fifteen staffs' participants filled the questionnaires and returned for assessment. All the information provided by the participating dentists was then arranged in the form of table and assessed as shown in **Tables 1 and 2**

RESULTS

This study consisted of total participants of 33 members out of which 18 PG students and 15 staffs. 55 percent of the study population was PG students and 45 percent were staffs. The data details were subjected to statistical analysis. All the participants preferred Lignocaine local anesthesia as first choice and 98% of them had a preference for local

anesthetic with adrenaline. Even though 90% of dentists had the habit of history taking regarding any drug allergy before starting the treatment, not even one participant admitted that they give test dose on routine basis. Only 6% know which drug group may cause allergic reaction while 94% were unaware of it. The results show that majority of participants have some knowledge about the symptoms of anaphylaxis but none of them had a thorough knowledge of all the symptoms. Only three percent of participants had actually seen a case with adverse reaction to local anesthesia. This awareness did not differ with age, experience. The results of the study also indicate that 98% of the participants had the idea of presence of emergency medicine kits but only 30 percent had the knowledge about various drugs present in the

division of prosthodontic clinics. 90% showed they would be able to manage such situation and only 40% would go for start of treatment while remaining 50% would refuse such patients, while 10 percent were not sure of management. Though 63% of the participants knew that the preferred choice of treatment for anaphylaxis was epinephrine, only 18% were aware about its route of administration. 2 percent suggested alternate route of administration for epinephrine, whereas 80% were totally unaware of how to administer epinephrine clinically on patients as mentioned in **Table 1 and 2**. Corticosteroids and antihistamines were considered as one of the ideal choice of drug for the treatment in anaphylaxis in about 80% of the study population, which was a misconception.

Table 1: Knowledge of PG students and staff about Anaphylactic Reaction to LA

Questions	Knowledge of Dentists	
	Lignocaine / Medicaine	Others
Which LA you use indaily practice	98%	2%
Do you prefer LA withadrenaline or Without adrenaline	With adrenaline	Without adrenaline
	98%	02 %
Do you take history of any drug Allergy before treatment?	Yes	No or occasionally
	85 %	15 %
Do you ask previous experience of LA for treatment	63 %	37%
Do you know signs and symptoms of Allergic reaction in patients after giving LA?	65 %	35%
Do you know which group of LA is more likely to cause anaphylaxis?	36%	64 %
Have you received any training / workshop attended to deal such emergency?	66 %	34%
Do you know how to do allergic test?'	40%	60%

Table 2: Attitude of dental surgeons towards anaphylactic reaction

Questions Asked	Yes	No
Do you check expiry date of LA	92%	08%
Do you ask for any allergy from LA before injection.	85%	15%
Do you perform aspiration before injection?	70%	30%
Do you perform Allergy test of patient before treatment	3%	97%
Is Medical emergency kit available in clinic	98 %	2%
Do you know the use of emergency kit?	74%	26%
Do you know the preferred drug for Allergy	63%	37%
Do you know the route of drug use?	18%	56 % alternate route, 9 % don't know
Will you be able to manage emergency?	60%	40 %
If u know patient is Allergic to LA, would you start treatment or can you handle such patient?	40%	60 %

DISCUSSION

Local Anesthesia is one of commonly used drugs during dental procedures. Anaphylactic reactions during treatments are very rare but they can occur and have severe consequences. Several studies from various countries have been reporting incidences of Anaphylactic reactions from local anesthesia ranging from 1 in 3,500 to 1 in 20,000 during dental treatments [12-16]. Although incidence ratio of reaction is low but its effects irrespective of dosage, can be severe, sometimes life threatening. So, the dental surgeons should have necessary knowledge and ability or attitude to manage it. As majority of dental treatments require use of low concentrations of Local Anesthesia along with vasoconstrictor, some studies indicate that the toxicity or anxiety reaction to these agents can be sometimes misinterpreted with anaphylactic reactions [17, 18]. Several studies have shown that chances of allergic reaction are more from ester type anesthetics

than amide-type and allergic reactions seen in patients can be most likely from the methyl paraben and metabisulfite preservatives added in the solution rather than anesthetic agent itself [19]. This study shows that more than half of the participants were confident about handling anaphylaxis at their dental office, of which staff were better than PG students, whereas the remaining had an attitude of calling ambulance in case of emergency conditions. The participants who were not sure of handling these situations lacked hands-on experience and required further workshops and training programs. If a significant incident of anaphylaxis is encountered, intramuscular (IM) injection of epinephrine into the lateral thigh is the first line of treatment [20]. The results of the present study show that 63% of the dentists were confident that epinephrine was the first-line drug of choice in management of anaphylaxis, but only 18% had knowledge about the route of administration of epinephrine during an

anaphylactic episode. In some severe systemic reactions generally corticosteroids and antihistamine are used but usually no substitutes or alternative of epinephrine is used for Local Anesthetic reaction [21-23].

This study shows that 12% of dentists admit the use of antihistamines in the management of anaphylaxis as they have less knowledge. The observations from the present study reflect the alarming situation about the capability of PG students and staff to deal with an emergency of anaphylaxis from local anesthesia. Although the theoretical aspect of emergencies is taught in the dental colleges but little or no clinical training or exposure is given. There is urgent need of mandatory inclusion in teaching dental emergency subject theoretically and clinically during first six months of postgraduate course

CONCLUSION

Anaphylactic reaction during dental treatments is rare but when occurs, it could lead to severe problems. Our study has pointed out lack of knowledge and attitude of PG students and staff facing such reactions. This is a serious matter and requires awareness about basic life support and continuing dental education programs, workshops and hands-on courses related to such situations should be made mandatory each year for clinicians to prevent any serious

consequences. There is urgent need of mandatory inclusion in teaching dental emergency subject theoretically and clinically during first six months of postgraduate course

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