AWARENESS ON MANAGEMENT STRATEGIES OF ANAPHYLACTIC SHOCK AMONG DENTAL STUDENTS

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ABSTRACT:

Anaphylaxis is an acute systemic reaction with symptoms of an immediate-type allergic reaction which can involve the whole organism and is potentially life threatening. Anaphylactic reactions are the most severe and potentially life threatening dramatic conditions seen in allergy. Anaphylaxis guidelines highlight the severity of the anaphylactic episode and the risk of death.

AIM AND OBJECTIVE:

To evaluate the awareness and knowledge regarding the management strategies of Anaphylactic shock among dental students.

MATERIALS AND METHODS:

A questionnaire based survey was conducted among 105 dental students.The results were collected and Data analysis was done using SPSS software.

CONCLUSION:

The knowledge and awareness regarding the management of Anaphylactic shock is not sufficient and should be improved.

KEYWORDS: Anaphylactic shock, Epinephrine, MAST suit, Adrenaline auto injector

INTRODUCTION:

Anaphylaxis is an acute systemic reaction with symptoms of an immediate-type allergic reaction which can involve the whole organism and is potentially life threatening .Anaphylactic reactions are the most severe and potentially life threatening

dramatic conditions seen in allergy. Anaphylaxis guidelines highlight the severity of the anaphylactic episode and the risk of death. Since anaphylaxis is characterized by rapidly developing life threatening airway and circulation problems, it must be managed quickly(1). However, anaphylaxis is often difficult to recognize owing to the variability of diagnostic criteria, which in turn leads to a delay in administration of appropriate treatment, thus increasing the risk of death. If you are allergic to a substance, your immune system overreacts to this allergen by releasing chemicals that cause allergy symptoms(2). Typically, these symptoms occur in one location of the body. However, some people are susceptible to a much more serious anaphylactic reaction. This reaction typically affects more than one part of the body at the same time(3).Anaphylaxis requires immediate medical treatment, including a prompt injection of epinephrine and a trip to a hospital emergency room. If it isn't treated properly, anaphylaxis can be fatal.Certain people are more at risk of anaphylaxis(4). If you have allergies or asthma and have a family history of anaphylaxis, your risk is higher. And, if you've experienced anaphylaxis your risk of having another anaphylactic reaction is increased.Anaphylaxis develops rapidly, usually reaching peak severity within 5-30 min, and may, rarely, last for several days. All dental practitioners should be aware of the diagnosis and management of emergencies such as anaphylaxis that may arise from the use of local anesthetic agents in their clinical set up(5). Resuscitative drugs such as antihistamine, adrenaline and corticosteroids should be available at chair side for immediate use. All patients must be warned prior to local anesthetic agent administration of the possible danger that follows its use. They should be told to report back immediately to the clinic if a rash should develop(6).Anaphylaxis may develop immediately and is usually immediately life-threatening due to respiratory embarrassment(5). Early symptoms and signs include a sensation of warmth, itching especially in the axilla and groin, and a feeling of anxiety and panic. These may progress into an erythematous or urticarial rash, edema of the face and neck, bronchospasm and laryngeal edema(7). The symptoms of anaphylactic reactions are caused by release of different mediators (e.g. histamine, prostaglandins, leukotrienes, tryptase, platelet-ac- tivating factor, cytokines, chemokines) from mast cells and basophil granulocytes , the individual significance of each of these is not assessed clearly in detail. However, there is a consensus that histamine plays a central role in anaphylactic reactions(8).The pathomechanism of anaphylaxis usually represents an immunological reaction, most often an immunoglobulin E mediated allergy. However, specific antibodies of other classes can trigger similar complement dependent symptoms through the formation of circulating immune complexes (immune complex anaphylaxis)(9).There are also a high number of anaphylactic reactions where no immunological sensitization is detectable ; these reactions are called pseudo-allergic reactions or recently non-allergic anaphylaxis. The mechanisms of this non-allergic anaphylaxis comprise G protein-induced, direct release of vasoactive mediators, direct activation of the complement system, interactions with the kallikrein kinin system, interactions with arachidonic acid metabilism as well as psychoneurogenic reflex mechanisms(10). Knowledge on the pathophysiology of these reactions is much more limited than on allergic anaphylaxis.Accurate diagnosis and successful management of allergies is essential. An allergist is often referred to as an allergist, has specialized training and experience to diagnose the problem and help you develop a plan to protect you in the future(11).This study is aimed to create knowledge and awareness regarding the management strategies of Anaphylactic shock among dental students.

MATERIALS AND METHODS:

A questionnaire based survey was conducted among 105 college students in Chennai,Tamil Nadu. The questionnaire was prepared to assess the awareness on management of Anaphylactic shock among Dental students(Figure:1). It was distributed through an online survey link (surveyplanet.com). Data analysis was done using spss software.

Are aware of the term Anaphylactic shock?	(A)Yes. (B)No
Are aware that anaphylactic shock can lead to death?	(A)Yes. (B)No
What are the first signs of anaphylaxis?	(A)Dizziness (B)Skin rashes (C)Wheezing (D)Nausea (E)All of the above
Are you aware that Epinephrine is used as the first line drug for Anaphylactic shock?	(A)Yes. (B)No
What do you think is the choice of administration route of Epinephrine?	(A)Subcutaneous.(B)Intramuscular (C)Intravenous (D)Not aware
How long does Epinephrine stay in you system?	(A)5-10minutes (B)10-20 minutes. (C)1 hour. (D)3 hours
How many doses of Epinephrine can you administer normally?	(A)Two doses. (B)Four doses. (C) Six doses. (D)Not aware
What do you think is the use of Epinephrine?	(A)Constriction of airway-blocking Muscles (B)Dilation of airway-blocking muscles. (C)None of the above. (D)Not aware
Do you know that Diphenhydramine is administered secondary to Epinephrine?	(A)Yes. (B)No

Do you know that glucocorticoid and Antihistamines are given intravenously for anaphylactic shock?	(A)Yes. (B)No
What do you think is the use of glucocorticoids?	(A)Reduce inflammation of air passages. (B)Improve Breathing. (C)Both (A) and (B) (D)None of the above
Are you aware that Supplemental oxygen is essential in managing anaphylactic patients?	(A)Yes. (B)No
Do you know that Beta agonists are administered for anaphylactic shock?	(A)Yes. (B)No
Are you aware of (AAI) Adrenaline Auto Injector?	(A)Yes. (B)No
Are you aware that Vasopressors such as Dopamine and noradrenaline are administered, particularly when adrenaline and fluids have failed?	(A)Yes. (B)No
Are you aware that administration of Naloxone, thyrotropin-releasing hormone and the MAST suit are being used in anaphylactic patients (occasionally)	(A)Yes. (B)No

RESULTS:

The survey questions were answered by 105 dental students.The results varied from individual to individual. It was noted that majority of nearly 93% of participants are aware of the fact that Anaphylactic shock can lead to death but only 48.4% of students are aware of the first signs of anaphylaxis.And 93% of participants are aware of the administration of Epinephrine as the first line drug for anaphylaxis and only 38.7% of students are aware of the fact that intramuscular administration is the choice of administration route of Epinephrine.Only 45.2% of participants are aware of the duration of action of Epinephrine and 38.7% students are aware of the doses of Epinephrine.Only 38.7% of participants are aware of the bronchodilator action of Epinephrine.However, 83.9% of participants are aware of the intravenous administration of glucocorticoids but only 41.9% of participants are aware of the administration of Diphenhydramine secondary to Epinephrine. Only 41.9% of students were aware of Adrenaline auto injector and 35.5% students were aware of the admistration of thyrotropin releasing hormones, Naloxone and MAST suit[Figure:1-11].Therefore, seminars and CDE programs should be conducted to improvise their knowledge.

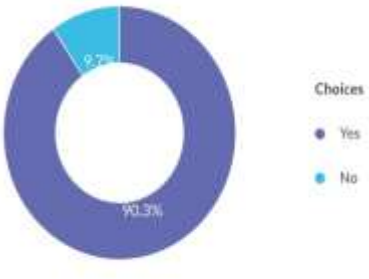

Figure:1- Anaphylactic shock can lead to death

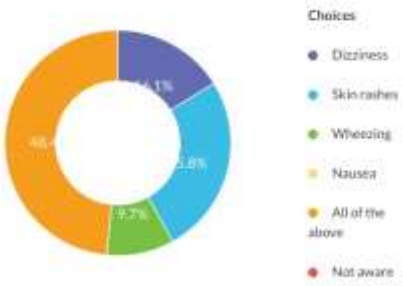

Figure:2- First signs of Anaphylaxis

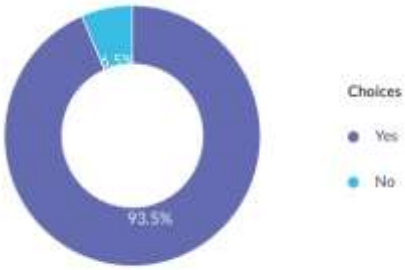

Figure:3- Epinephrine—First Line Drug

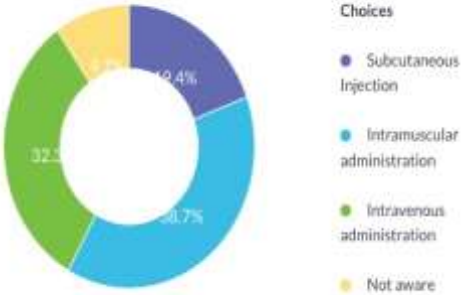

Figure:4- Administration route of Epinephrine

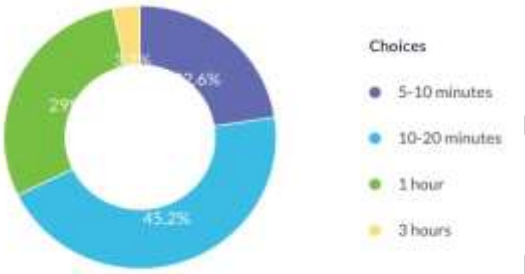

Figure:5- Duration of Action of Epinephrine

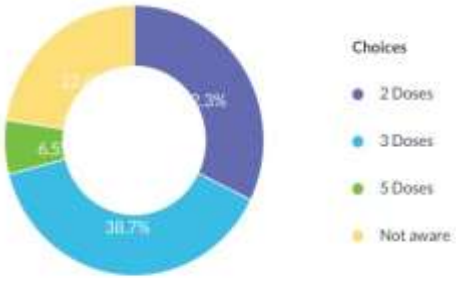

Figure:6- Number of Doses of Epinephrine

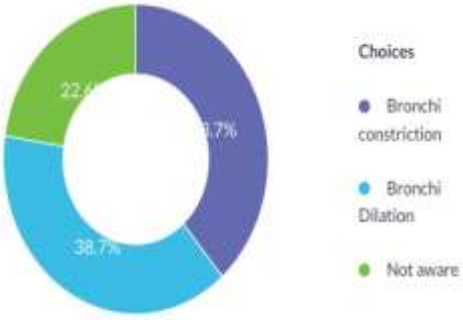

Figure:7-Use of Epinephrine

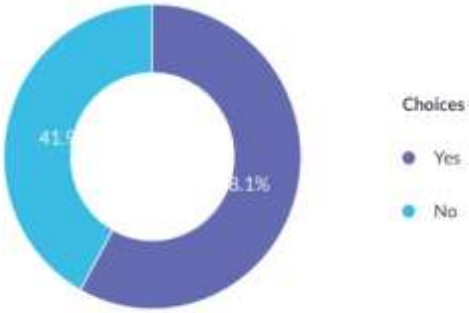

Figure:8-Administration of Diphenhydramine secondarily

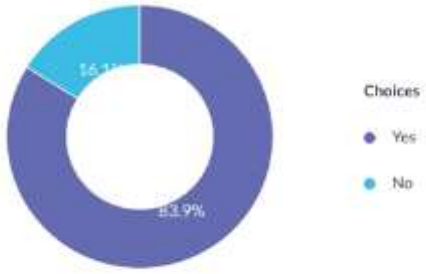

Figure: 9- Intravenous administration of Glucocorticoids

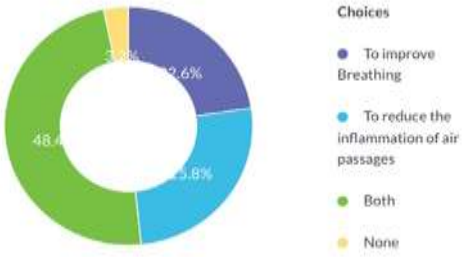

Figure:10-Use of glucocorticoids

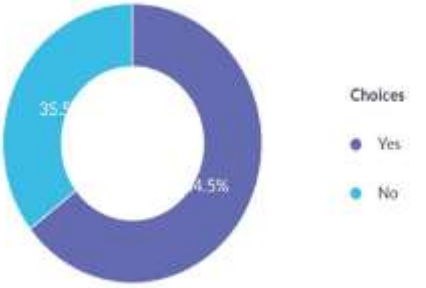

Figure:11-Administration of MAST suit

DISCUSSION:

This study states that only 37% of dental students were aware of the knowledge and management strategies of Anaphylactic shock. Anaphylaxis after taking these drugs, however, apparently occurs via a different mechanism that is more consistent with IgE-mediated anaphylaxis. With true anaphylaxis, the different cyclooxygenase inhibitors do not appear to cross-react(12) Anaphylaxis occurs only after 2 or more exposures to the implicated drug, suggesting a need for prior sensitization. Finally, patients with true anaphylaxis do not usually have underlying asthma, nasal polyposis, or urticaria.The most common causes of death are cardiovascular collapse and respiratory compromise(13). One report examined 214 anaphylactic fatalities for which the mode of death could be surmised in 196, 98 of which were due to bronchospasm, 26 both upper and lower airways, and 23 upper airways [angioedema]). The fatalities from acute bronchospasm occurred almost exclusively in those with preexisting asthma(14).If the dental practitioner know what has triggered anaphylaxis, it is important to take steps to try to avoid further exposure to similar triggers(15). Recent guidance from the National Institute for Health and Clinical Excellence advises measurement of mast-cell tryptase as soon as possible after emergency treatment for anaphylaxis. A further sample can be taken after 24 h or at follow-up in an allergy clinic(16). This establishes an individual's baseline level. In children, mast-cell tryptase should only be measured in cases thought to be either idiopathic, venom-induced or drug-related.Patients may experience multiple anaphylactic episodes(17). The Rochester study detected a total of 154 anaphylactic episodes involving 133 people in a 5-year period. Most patients (116) had only 1 episode in those 5 years. Thirteen people had 2 episodes, and 4 people had 3 episodes.In contrast, in the Memphis study, 48% of patients had 3 or more anaphylactic episodes. Of the 112 patients who responded to survey, however, 38 patients (34%) reported a recurrence of symptoms and the remaining 74 patients (66%) reported remission of symptoms. Overall, 85% of patients either were in remission or reported diminished symptom severity in a subsequent episode or episodes(18). The Memphis study evaluated a referral population and also deliberately excluded patients with anaphylaxis due to insect stings or SCIT(19).If the cause of the allergic reaction is not known, the patient should be referred to a specialist allergy clinic where tests can be carried out to help identify possible triggers(20). Dentists may be provided with an adrenaline auto-injector to use during any future episodes of anaphylaxis.

CONCLUSION:

This study concludes that the knowledge and awareness regarding the management strategies of Anaphylactic shock among the dental students are not sufficient and should be improved. Therefore, workshops, seminars and CDE programs should be conducted to improvise their knowledge regarding anaphylactic shock.

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