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Review Article

Different types of medical emergencies in dental practice: A review

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ABSTRACT

Fortunately medical emergencies rarely occurs in daily dental practice. The risk of any serious complications can be reduced by ensuring that the basic life supporting drugs are in the appropriate place and the whole dental team should be well trained in basic life support measures. It is important for a dental practioner to have a thorough knowledge in recognizing and carrying out its initial management.

1. Introduction

Medical emergency can occur in dental practice. The dentist should be well known to recognize the medical emergency in the initial period and start with the initial treatment before the emergency turned in to any serious complication.[1] These type of medical emergency can happen to any patient, it can happen to the dentist itself or to any dental assistant or to the person who is accompanying the patient itself. Before going to any dental routine procedure, one should go thoroughly through the medical history of the patient. Literature revealed that more than 54 percent of the medical emergency occurs soon after giving the local anesthesia or during the administration of the local anesthesia.[2–4]

These medical emergencies can happen from minor emergency to life threating medical emergency.

Risk assessment medically

Medical risk assessment should be done of each and every patient before undergoing any dental procedure.[5–7] Medical risk assessment should be done by the dentist in person via questionnaire method, through having a proper blood investigation report if the patient is undergoing any minor or major oral surgical procedure, having a thorough information of if the patient is on any medication or not.[8]

Most commonly occurring medical emergency in dental practice are as follows:

1. Syncope
2. Postural hypotension
3. Allergic reaction
4. Adrenal insufficiency
5. Hyperventilation
6. Status asthmaticus
7. Status epilepticus
8. Cardiac pain.

In the management of some common medical emergency, basic life saving drugs are as follows:

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1. Oxygen
2. Oral glucose solution in the form of powder, liquid
3. Injection of glucagon 1mg
4. Salbutamol inhaler
5. Adrenaline 1mg / ml
6. GTN sublingual spray 400 micrograms per dose
7. Aspirin (dispersible)
8. Midazolam (buccal or intra nasal)

Some of the medical equipment's required in the clinic are as follows:

1. Oxygen cylinder portable with pressure reduction valve.
2. Oxygen face mask along with tubing.
3. Oro pharyngeal airways of all the sizes.
4. Pocket mask with oxygen port.
5. Self-inflating bag and mask apparatus.
6. Portable suction with appropriate suction tubing.
7. Sterile syringes and needles.
8. Blood glucose measurement device.

Survey if any medical emergency happens

First of all if any medical emergency happens in the clinic, stay calm, ensure that the patient along with the doctor should be in safe position, means the patient should not fall over the ground or the dentist should not fall, there should be no sharp instruments near the patient or near the dentist, that may cause further harm to the patient or to the dentist. After than inspect the patient, if the patient looks unwell ask the patient if he or she is fine or not, if the patient is conscious ask the patient is he or she is alright and if the patient does not respond or unconscious, shake the patient gently and repeat the questions again. If the patient responds normally, it is clear that patient is having a clear air way and if the patient does not respond clearly or any stridor is present means air way is blocked and need to do things that way.[4,8,9]

Specific responses for the medical emergencies:

2. Vasovagal Syncope

Syncope is defined as transient or sudden loss of consciousness with recovery to the normal that is spontaneous. Syncope is commonly provoked by anxiety, low blood pressure, long standing. This response is mediated neurally. In vasovagal syncope there is involvement of reflex bradycardia that too with or without peripheral vasodilation. It usually don't occur when the patient is lying in supine position. If the patient goes in vasovagal syncope, signs and symptoms of syncope are pallor, loss of consciousness, sweating and nausea. Initially lie the patient in supine position with his or her legs elevated, oxygen can be administer and let the patient in supine position only until the patient becomes conscious. To maintain the proper airway head lift chin tilt procedure can be performed. Loosening of clothes, collars or ties to main the air way should be done as well as use of aromatic ammonia is very much helpful in waking up the patient from the unconsciousness.[3,4,8–12]

3. Postural Hypotension

Postural hypotension is the second most common cause of loss of consciousness in the dental practice. In any dental procedure when the patient is lying in a supine position during the treatment that may lasts for 1 to 2 hours and then suddenly the chair reclined from supine position to the stand position or when the patient stand quickly leads to a condition known as postural hypotension.[11–14]

Some of the other causes of postural hypotension are intake of certain drugs, prolonged convalescence period or inadequate reflex postural or during late stage of pregnancy.

3.1. Management of postural hypotension

If the patient is in unconsciousness, than the patient is placed in supine position only with his / her legs elevated until the patient become responsive. Proper airway should be maintained. If the patient is in consciousness state oxygen administration should be done with the help of full face mask along with the flow rate of 6 to 10 liters of oxygen per minute and if the patient is unresponsive administration of oxygen should be done with the help of bag valve mask device along with a flow rate of 10 to 15 liters per minute.[10–15]

4. Angina

It results due to imbalance between the blood supply of myocardium and oxygen demand. Typically angina is precipitated by any type of exertion, stress or exposure to cold. It usually lasts for 1 minute to five minute and relieved by taking rest or by the administration of GTN.

5. Management

If any sign and symptom of angina occurs in the patient, for e.g. patient says pain in the chest or says radiating pain from the chest to the shoulder, immediately stop the procedure and instead of lie the patient in the supine position make the patient to sit upright position, administer oxygen to the patient, give GTN tablet sublingually wait for 10 minutes and if the patient does not recover transfer the patient immediately to the hospital for the medical treatment.

5.1. Status epilepticus

It is characterized by the episode of seizure which may last for few minutes to 30 minutes. Literature stated that if convulsive movements occur than more than 5 minutes administration of diazepam intravenously is considered to be the first line of drug of choice. Lie the patient flat

immediately with removal of any sharp objects or any object that may have the tendency to cause harm to the patient. Remove all the objects from the patient mouth immediately. Lie the patient flat or turn the patient to the one side so that tongue does not fall in the backward direction. If the patient does not recover within 5 minutes, administration of oxygen should be administer, if still the patient does not respond administration of diazepam 10 mg intravenously over 2 minutes should be done to calm the patient.

5.2. Hypoglycemia

If the patient is remained in long standing position or the patient came empty stomach in the morning may falls for hypoglycemia. In this patient looses his or her consciousness, patient should lie in the supine position with his or her legs elevated, looses his clothes so that the proper airway breathing and circulation should be maintained, oxygen administration should be done, if the patient becomes conscious or responsive give 10 to 20 mg of glucose and if the patient remain in unconscious state administer glucagon 1mg through intravenous or intramuscular route.

5.3. Status asthmaticus

Asthma is a state of recurrent episodes of cough along with dyspnea. If the patient encounters any asthmatic attack during the course of treatment. Immediately stop the dental procedure, remove any dental instrument from the mouth because the patient is having the tendency to engulf any instrument that left in the patient mouth. ask the patient to sit in upright relaxing position, loose all the tight clothing for proper airway circulation, administration of high flow oxygen should be done, and if the patient does not recover from this administration of salbutamol inhaler with one puff of salbutamol and allow six breathes repeat this procedure every 1 minute for 5 minutes till there is no improvement administration of hydrocortisone 100 mg should be done.

5.4. Anaphylaxis

Is is an immunological condition with sudden onset, which is developed after exposure to the foreign body. It ultimately results in release of inflammatory mediators i.e. histamines, prostaglandins, platelet derived growth factors and ultimately produced clinical manifestation.

6. Management

Clinical signs and symptoms comes in the form of rashes, itching , swelling on the face, bronchospasm, initially detect the cause and remove the cause, lie the patient in the supine position with his or her legs elevated with administration of high flow of oxygen should be administer. And if the symptoms does not subside start administrating adrenaline 0.5 mg through intramuscular or intravenous route.

6.1. Hyperventilation

Hyperventilation occurs mostly due to extreme anxiety and stress. In hyperventilation patient might feels the sensation of chest tightening, suffocation, nausea, dizziness and most commonly breathing cycle increases to 25 to 30 breathes per minute. Management includes making the patient sitting in upright position, ask the patient to remain calm, administration of oxygen should be done. And if the patient does not recover than administration of diazepam or midazolam through the intramuscular or intravenous route should be done.

7. Conclusion

Dentist should have a thorough knowledge of basic life supporting drugs and without wasting a time should start with the initial treatment process of the patient. Dentist should have a basic life supporting drugs in the clinic and other than the dentist, the other staff should also be known with the life saving drugs.

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9. Conflict of Interest

None.

References

1. Melkar R. Recommendations for ventilation during cardiopulmonary resuscitation: time for change? *Crit Care Med*. 1985;13(1):882–9.
2. Greenwood M. Medical emergencies in dental practice: 2. Management of specific medical emergencies. *Dent Update*. 2009;36(5):262–8. doi:10.12968/denu.2009.36.5.262.
3. Dailey RH. Principles and Practice of Emergency Medicine; 1992. p. 652. Available from: https://www.amazon.in/Principles-Practice-Emergency-Medicine-Aggarwal/dp/8172252137.
4. Eberle J. A treatise on the practice of medicine,Philadephia. 1830;5th:1797–1879.
5. Zacharias M, Hunter K, Mac D. Cardiopulmonary Resuscitation in Dental Practice - an update. *NZDJ*. 1994;90(400):60–5.
6. Deihl RR, Linden D. Images in clinical medicine: Neurocardiogenic syncope. *N Engl J Med*. 1998;339(5):312.
7. Erie JK. Effect of position on ventilation. *Anesthesiology Rev*. 1991;6(19):384. doi:10.21037/atm.2018.05.50.
8. Kemp JP. Recent advances in the management of asthma using leukotriene modifiers. *Am J Respir Med*. 2003;2(2):139–56.
9. Soler M, Imhof E, Perruchoud AP. Severe acute asthma:pathophysiology, clinical assessment and treatment. *Respiration*. 1990;57(2):114–21.
10. Groneberg DA, Wagner U, Chung KF. Mucus and fatal asthma. *Am J Med*. 2004;116(1):66–7.
11. Atherton GJ, Pemberton MN, Thornhill MH. Medical emergencies: the experience of staff of a UK dental teaching hospital. *Br Dent J*. 2000;188(6):320–4.
12. Resuscitation Council UK. Medical Emergencies and Resuscitation. Standards for clinical practice and training for dental practitioners and dental care professionals in general dental practice. Resuscitation

Council UK. 2006;Available from: https://www.adam-aspire.co.uk/wp-content/uploads/2011/02/resuscitation-guidelines.pdf.
13. Marenco J, Wang P, Link M. Improving survival from sudden cardiac arrest: the role of the automated external defibrillator. *JAMA*. 2001;285(9):1193–1200.
14. Miller C, Dembo J, Falace D, Kaplan A. Salivary cortisol response to dental treatment of varying stress. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod*. 1995;79(4):436–41.
15. Miller CS, Little JW, Falace DA. Supplemental corticosteroids for dental patients with adrenal insufficiency: reconsideration of the problem. *J Am Dent Assoc*. 2001;132(11):1570–9.

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