Basic management of medical emergencies

Recognizing a patient's distress

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ABSTRACT

Background and Overview. Medical emergencies can happen in the dental office, possibly threatening a patient's life and hindering the delivery of dental care. Early recognition of medical emergencies begins at the first sign of symptoms. The basic algorithm for management of all medical emergencies is this: position (P), airway (A), breathing (B), circulation (C) and definitive treatment, differential diagnosis, drugs, defibrillation (D). The dentist places an unconscious patient in a supine position and comfortably positions a conscious patient. The dentist then assesses airway, breathing and circulation and, when necessary, supports the patient's vital functions. Drug therapy always is secondary to basic life support (that is, PABCD).

Conclusions and Clinical Implications. Prompt recognition and efficient management of medical emergencies by a well-prepared dental team can increase the likelihood of a satisfactory outcome. The basic algorithm for managing medical emergencies is designed to ensure that the patient's brain receives a constant supply of blood containing oxygen.

Key Words. Medical emergencies; basic life support; seizures; hypoglycemia; chest pain; angina pectoris; acute myocardial infarction; bronchospasm; syncope; allergy.

JADA 2010;141(5 suppl):20S-24S.

Early recognition of medical emergencies begins at the first sign or symptom.[1] Familiarity with the patient's medical profile aids immensely in recognition; knowing what to expect and what to look for promotes a faster response. The dentist needs to focus on what is happening with a patient minute by minute because distractions slow response time.

By performing a simple visual inspection of the patient, the dentist can determine if he or she has various diseases such as obesity, a history of cerebrovascular accident (CVA) (stroke), Parkinson disease, jaundice, exophthalmos, breathing difficulties and heart failure (orthopnea).

When treatment is indicated, the dentist should proceed without hesitation. Often, management of medical emergencies in the dental office is limited to supporting patients' vital functions until emergency medical services (EMS) arrives. This is especially true in the case of major morbidity such as myocardial infarction or CVA. Treatment should consist minimally of basic life support and monitoring of vital signs.[2] The dentist never should administer poorly understood medications.

An emergency management plan, as described by Haas[3] in this supplement and by Peskin and Siegelman,[4] is of paramount importance. The dental team's ultimate goal

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is the prevention of life-threatening emergencies.

While the focus of this article is the recognition of patients in distress, I should point out that dentists initially should manage all medical emergencies in the same way by using what is known as the basic algorithm[5(p60)]:

- position (P) the patient;
- airway (A);
- breathing (B);
- circulation (C);
- definitive treatment, consisting of differential diagnosis, drugs and defibrillation (D).

Although many different medical emergencies may occur in the dental office, some are seen more often than others. I will not attempt to be exhaustive in this article; for a comprehensive review, readers should refer to one of the textbooks on the topic.[5,6] This article serves as a brief review of some of the commonly encountered medical emergencies in the dental office. I examine some of these medical emergencies and their most common manifestations and lightly touch on some potential treatments.

RESPIRATORY DISTRESS

Respiratory distress in a dental patient may take one of many forms. For example, the precipitating problem may be asthma, an allergic reaction, tachypnea (hyperventilation, a pulmonary embolus, acute congestive heart failure, diabetic ketoacidosis, hyperosmolar hyperglycemic nonketotic syndrome) or unconsciousness.

Clinicians can recognize respiratory distress in a patient through a variety of manifestations. Probably the most common cause of respiratory distress seen in dental patients is asthma, also known as acute bronchospasm.[7] Patients with this type of respiratory distress typically will want to sit upright (position). The dentist follows this with an evaluation of the patient's airway. Is it patent? By definition, conscious patients who can talk have a patent airway, are breathing and have sufficient cerebral blood flow and blood pressure to remain conscious. Definitive treatment includes administration of a bronchodilator. For conscious patients, this bronchodilator commonly is albuterol, administered via a metered-dose inhaler. If the patient loses consciousness or is uncooperative with administration of albuterol via inhalation or if bronchospasm is refractory to administration of albuterol, telephoning EMS (9-1-1) and administering epinephrine parenterally (intramuscularly) are indicated. Subcutaneous administration no longer is thought to be most efficacious.[8,9]

CHEST PAIN

Another potential medical emergency seen in dental offices is chest pain.[10] Many factors may precipitate chest pain, such as acute myocardial infarction (AMI), angina, paroxysmal supraventricular tachycardia, gastroesophageal reflux disease, anxiety and costochondritis.

When describing their chest pain, many patients do not describe the feeling as pain per se. They commonly use terms such as "squeezing," "tightness," "fullness," "constriction," "pressure" or "a heavy weight" on the chest. There are many potential causes of chest pain. I will examine two that the dentist can manage, or begin to treat, in the dental office. I will not address chest pain of noncardiac origin, although it certainly is valid and somewhat common in the population at large.

If a patient is experiencing chest pain, he or she will let the dentist know, so recognition of the problem will not be difficult. A conscious patient experiencing chest pain is free to be in any position that is comfortable. As stated earlier, these patients often will want to sit upright. Conscious patients who can talk have a patent airway, are breathing and have sufficient cerebral blood flow and blood pressure to retain consciousness. The difficulty for the dentist is the differential diagnosis of chest pain.[11]

Angina pectoris and AMI are the two most likely cardiac problems in a conscious patient who is exhibiting chest pain in the dental office. Other possibilities exist, but this article focuses on the recognition and early treatment of these two common entities. If the patient had experienced cardiac arrest, he or she would not be conscious.

Differential diagnosis. A differential diagnosis of chest pain involves looking at a number of signs and symptoms. One consideration is the patient's history. Has he or she ever experienced anginal chest pain? If so, it is likely that the current chest pain is angina pectoris. However, if this is the patient's first episode of chest pain, the dentist should treat him or her as if it were an AMI and have EMS transfer the patient as

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ABBREVIATION KEY: AMI: Acute myocardial infarction. **CVA:** Cerebrovascular accident. **EMS:** Emergency medical services. **MONA:** Morphine, oxygen, nitroglycerin and aspirin. **PABCD:** Position, airway, breathing, circulation, definitive treatment.