

Original Research Article

A Survey on Knowledge and Management of Medical Emergencies in dental practice among Dental Graduate Students

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Abstract: Training in the management of medical emergencies is considered an essential component of the undergraduate dental curriculum. Few diseases and their treatments increase the likelihood of a medical emergency during dental care, hence dentists must be prepared to manage a variety of medical emergencies. The specific aims of this study were to assess the knowledge dental graduates have regarding medical emergencies; to identify their ability to assess and handle emergency situations; and to evaluate their knowledge about the drugs prescribed in various clinical conditions. A questionnaire with a set of eleven questions was designed to obtain relevant information on the drugs prescribed by dental graduates in various clinical conditions and the management of most commonly encountered emergencies. The questionnaire also sought information on the frequency of medical emergencies encountered in clinical practice. The questionnaire was handed over to the interns, postgraduates and clinicians in Mangalore. 400 dental graduates were included in the study. The results observed were 96% of the dentists knew the prophylaxis regimen before starting surgical dental procedures in patients with infective endocarditis. 98% had knowledge about the drugs to be avoided in chronic alcoholics and in pregnant women 96% knew the treatment of choice for anaphylactic shock. Knowledge regarding the International Normalized Ratio values was low, only 62% of the respondents could answer the question. Our study concluded that most respondents were well versed to deal with medical emergencies occurring in the dental clinics and had adequate knowledge regarding the medications prescribed under various medical conditions.

Keywords: Medical emergencies, International Normalized Ratio, Infective endocarditis, pregnancy, antibiotics

INTRODUCTION

Training in the management of medical emergencies is considered an essential component of the undergraduate dental curriculum, with a recommendation for training in basic life sciences. Dentists prescribe medications for the management of a number of oral conditions, mainly orofacial infections. Knowledge and judicious use of antibiotics is of utmost importance as on one hand, there are side effects with repercussions for the patient, such as gastric, hematological, neurological, dermatological and allergic. On the other hand, the chances of development of bacterial resistances are high.

Invasive procedures in the dental office might result in medical emergencies hence dental surgeons should be prepared to manage such situations [1]. The lack of training and inability to cope with medical

emergencies can lead to tragic consequences and sometimes legal action [2, 3]. Providing basic life support is the dentist's most important contribution until definitive treatment for a medical emergency can be given. There is a need to ensure that effective undergraduate training is available to be better prepared for future dental practice. Hence this survey was conducted to evaluate the knowledge of dental graduates regarding the drugs prescribed in various clinical conditions and in managing medical emergencies.

MATERIALS AND METHODS:

The purpose of this study was to evaluate the knowledge, experience, and perceptions of dental graduates, regarding the drugs prescribed in various clinical conditions and management of medical emergencies in the dental practice. A questionnaire with

a set of 11 questions was designed to obtain relevant information on the drugs prescribed and the management of most commonly encountered emergencies. The questionnaire was handed over to the interns, postgraduates and clinicians in Mangalore. Four hundred forms were distributed. The first two questions were directed towards obtaining personalised information of the dental graduates regarding the year of graduation and qualification. The frequency of treating medically compromised patients was addressed in the third question. The next five questions were related to the drugs to be prescribed and contraindicated/avoided in various medical conditions. The next two questions were regarding identification of the signs and symptoms of an impending hypoglycemic episode and treatment of choice for anaphylactic shock

respectively. In the last question information regarding the knowledge of International normalized ratio (INR) values before performing a dental surgery was asked. The data was then collected and statistically analysed.

RESULTS:

400 forms were distributed among dental graduates out of whom 347 forms were answered completely. The remaining 53 forms were answered as either an obligation /uninterested in revealing information and hence not included in the study. 96% of the dentists knew the correct prophylaxis before starting surgical dental procedures in patients with infective endocarditis. More details about the knowledge are presented in the following table.

| Questions | % of correct answer |
|--|---------------------|
| Prophylaxis before starting surgical dental procedures in patients with infective endocarditis | 96 |
| Drug to be avoided in chronic alcoholics | 98 |
| Drugs to be avoided in pregnancy | 98 |
| Drugs to be given if the patient develops angina during dental procedure | 98 |
| Drugs to be avoided in renal failure | 70 |
| The symptoms of hypoglycemia | 96 |
| The treatment of choice for anaphylactic shock | 96 |
| Surgery if required for patients with liver disease and coagulation disorders the INR* value should be | 62 |

*INR-International Normalised Ratio

Among the 347 dental graduates, 98% knew about the drugs to be avoided in chronic alcoholics and in pregnant women. 96% knew the treatment of choice for anaphylactic shock and could correctly identify the symptoms of hypoglycemia. 70% had knowledge about the drugs to be avoided in patients with renal failure. However, it was observed that only 62% of the respondents could answer correctly the required INR value to perform dental surgical procedures in patients with liver disease and coagulation disorders.

DISCUSSION

Emergencies do occur in the dental office a survey of 4000 dentists conducted by Fast and others revealed an incidence of 7.5 emergencies per dentist over a ten-year period[4]. The aim of this survey was to evaluate the knowledge of the doctors to manage various medical conditions and prescribe accordingly. In this study, it was observed that most respondents were well versed with the indications and contraindications of various drugs prescribed in conditions like pregnancy (97%), infective endocarditis (96%) and long- term alcohol abusers (98%). Clinical bacteriological and epidemiological factors determine the indications of antibiotics in dentistry. Antibiotics are used in addition to appropriate treatment to aid the host defences in the elimination of remaining bacteria. In

subjects with risk factors for local or systemic infection - including oncological patients, immune suppressed individuals and patients with metabolic disorders such as diabetes, prophylactic antibiotic coverage should be provided before attempting any invasive procedure. Following the guidelines of the American Heart Association prophylaxis for prevention of bacterial endocarditis is indicated in risk patients in the context of any invasive procedure within the oral cavity [5]. Lockhart reported more incidence of infective endocarditis following dental extraction and periodontal surgery [6]. In our survey, 96% of the dentists could identify the correct drug regimen before starting surgical dental procedures in patients with infective endocarditis.

Correct chairside positions, elective dental treatment during pregnancy, pregnancy related complications and the adverse effect of certain drugs(teratogenic) on the developing foetus are stressed in the dental curriculum hence most dentists (98%) could correctly answer the drug to be avoided in pregnancy.

Many antibiotics are actively eliminated through the kidneys. The presence of impaired renal function requires reduction of the drug dose in order to avoid excessively elevated plasma drug concentrations

that could lead to toxicity. Physician consultation is advised before and after organ transplant. Only 70% of the dentists could correctly identify the drugs to be avoided in cases of renal failure [7]. Some antibiotics are metabolized in the liver, followed by elimination in bile. In patients with liver failure, the use of such antibiotics should be restricted in order to avoid toxicity secondary to overdose [8]. Prothrombin time measures the extrinsic and common pathways and is reported as INR. In our study, it was seen that (38%) of dentists lacked knowledge regarding INR values. Patients with prosthetic valve placement or history of myocardial infarction, stroke or thromboembolism are frequently placed on anticoagulant therapy using Coumarin derivatives such as dicumarol and warfarin. The effectiveness of anticoagulation therapy is monitored by the prothrombin time hence blood investigations should be carried out before dentists undertake any surgical procedure in the above – mentioned conditions. The recommended level of anticoagulation for these patients is an INR of 2.0 to 3.0[9]. Minor periodontal therapy and simple extractions usually require an INR value less than 2.0 to 2.5. Complex surgeries or multiple extractions may require an INR value of less than 1.5 to 2.0. The physician should be consulted about reducing or discontinuing anticoagulant dosage [10]. Liver disease may affect all phases of blood coagulation as coagulation factors are synthesized in the liver. Long-time alcohol abusers or chronic hepatitis patients often demonstrate inadequate coagulation. In these patients, if simple surgical procedure is required the INR value less than 2.5 is generally safe [10]. In this survey, it was observed that only 62% of the dentists could correctly identify the required INR value to perform dental surgical procedures in patients with liver disease and coagulation disorders.

CONCLUSION:

Our study has found that most respondents were well versed with the medications prescribed under various medical conditions and in identifying and treating various medical emergencies commonly seen in the dental office. Emergencies cannot be totally prevented but can be managed appropriately with thorough knowledge of the signs, symptoms, and accurate treatment of the emergencies. Accomplishing this depends on the combined effort of the dental specialist, staff, and immediate availability of the critical drugs. The limitation of this study was that the questioner was not collected immediately from the respondents hence there is a possibility that the answers could have been checked from the source of information. Hence, training and skill improvement of the dental graduates is recommended through various training programs on medical emergencies, which will in turn improve the quality of dental practice, and be beneficial to the patients.

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