High prevalence of cardiovascular diseases among other medically compromised conditions in dental patients: A retrospective study

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ABSTRACT

Background: Over the last few decades, oral health care has become a greater priority as people live longer with serious medical conditions and disabilities. As a result, they require more comprehensive dental treatment. We are now, more than ever, at a turning point in history where dental care, or more broadly oral health care, is an integral part of medical care. Therefore, a need was felt to study the prevalence of medically compromised patients seeking dental treatments. **Materials and Methods:** The present study was a retrospective study conducted by reviewing the patient records starting from 1st January 2009 to 31st December 2010 for the presence of medically compromised conditions. Demographic data of the patients was also collected. **Results:** The prevalence of medically compromised conditions in dental patients of our hospital in the present study was 1.02%. The Cardiovascular diseases accounted to be the most prevalent condition (57.87%) followed by Endocrine disorders (35.73%). **Conclusion:** Even though the prevalence of medically compromised conditions in dental patients is not high, dentists should bear in mind that some of the patients may harbor such conditions, which are contraindicated for certain dental procedures or medication or require special attention when treating these patients.

Key words: Cardiovascular disorders, dental patients, medically compromised conditions

INTRODUCTION

Oral health care is an integral part of medical care. This fact is particularly evident when the patient seeking oral health care presents with systemic illness and/or disability.[1] To provide optimal dental care for this medically compromised population, it is important to obtain a good medical history prior to any dental treatment. Moreover, modifications of dental management due to compromising medical conditions are necessary to provide better and safer oral care for patients.[2]

As the proportion of the elderly in the population continues to increase, due to advances in medical technology, greater access to medical facilities and better socio-economic conditions, which enable people to live longer, as evidenced by an increase in the life expectancy in many parts of the world, there will be more patients with medically compromised conditions.[3]

In the United States, the number of people age 65 or older has increased more than 10-fold from 3 million (4% of the population) in 1900 to 35 million (13% of the population) in 2000. The size of the older population is estimated to double over the next 30 years, growing to 70 million by 2030.[4] As the 65 and older age group increases in size,

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their health demands will increase as well. These advances are also reflected in better oral health care in a number of patients since they still retain their natural teeth into the old age.[3] The National Center for Health Statistics reported that 15% of the adult population age 65 and over have chronic medical conditions. The most prevalent reported diseases are cardiovascular ailments, diabetes, hypertension, chronic bronchitis, and arthritis.[5,6]

It is becoming an increasingly larger responsibility for the dentist and other oral health care professionals to identify patients with systemic diseases, compromising conditions, and disabilities that have an impact on, and can be impacted by, oral health treatment. Though this situation is easily stated, the ability to practice dentistry properly within the context of the larger health care system is a challenge for the dental practitioner. The effective evaluation of the medical history is an integral aspect of the rationale for this challenge.[7]

There is a paucity of data concerning the prevalence of medically compromised conditions in dental patients from India. The aim of this study was to determine the prevalence of medically compromised conditions in dental patients.

MATERIALS AND METHODS

The patient records from the O.P.D. of Dental College and Hospital of Mathura City (India) starting from 1st January 2009 to 31st December 2010 were reviewed for the presence of medically compromised conditions. Demographic data regarding age and sex of the patients was collected. Two socioeconomic variables, i.e., income level and occupation were also collected from patients' records, and majority of patients belonged to low socioeconomic strata. The medically compromised conditions were classified into 11 categories as follows: Cardiovascular diseases, Endocrine disorders, Respiratory disorders, Hematologic disorders, Neurological disorders, Infectious disorders, Skeletal disorders, Gastrointestinal disorders, Renal disorders, Drug allergy and Liver disorders. The age of the patients was analyzed by descriptive statistics.

Statistical analysis

Chi square (χ^2) was used to describe male to female ratio. A *P* value less than 0.05 was considered statistically significant.

RESULTS

Out of 36,729 dental patients, a total of 375 patients were found to have of medically compromised conditions in the period of study. The prevalence of medically compromised conditions in dental patients of our hospital in the present study was 1.02%. The results of the present study are presented in Tables 1–3. The dental patients who were afflicted with medically compromised conditions with the mean age±SD=50.04±13.21 years. There were 199 male patients (53.06%) and 176 female patients (46.93%). Almost all categories elicited male predilection over female patients except in the Cardiovascular and Gastrointestinal diseases, but the difference here was statistically insignificant (*P*>0.05).

In the present study, the most frequently encountered disease category was Cardiovascular diseases (57.87%) followed in descending order by Endocrine disorders (35.73%), Respiratory disorders (7.47%), Hematologic disorders and Neurological disorders (3.47%), Infectious disorders (3.20%), Skeletal disorders (1.87%), Gastrointestinal disorders (1.60%), Renal disorders and Drug allergy

Table 1: Prevalence of medically compromised condition in dental patients

Medical condition	Count (*N*)	Prevalence (%)
Cardiovascular diseases	217	57.87
Endocrine disorders	134	35.73
Respiratory disorders	28	7.47
Hematologic disorders	13	3.47
Neurological disorders	13	3.47
Infectious disorders	12	3.20
Skeletal disorders	7	1.87
Gastrointestinal disorders	6	1.60
Renal disorders	5	1.33
Drug allergy	5	1.33
Liver disorders	2	0.53

Table 2: Mean age in years of medically compromised patients

Group	Age (males in years)	Age (females in years)	Age (total in years)
Cardiovascular diseases	55.48±10.07	47.99±13.16	51.71±12.29
Endocrine disorders	54.24±9.62	48.70±13.06	51.72±11.61
Respiratory disorders	47.25±9.84	48.08±9.03	47.60±9.34
Hematologic disorders	44.57±21.81	48.50±17.38	46.38±19.18
Neurological disorders	35.37±24.09	24.60±9.09	31.23±19.90
Infectious disorders	33.28±16.36	39.80±11.41	36.00±14.30
Skeletal disorders	59.25±9.60	57.66±19.39	58.57±13.12
Gastrointestinal disorders	45.00±7.07	40.75±4.75	42.16±5.30
Renal disorders	45.33±21.57	43.00±4.24	44.40±15.45
Drug allergy	41.66±11.93	34.00±2.82	38.60±9.52
Liver disorders	48.00	65.00	56.50±12.02
Total	52.46±12.63	47.36±13.36	50.04±13.21

Table 3: Comparison of medically compromised conditions between genders

Group	Number of M:F	Chi square for gender difference (*P* value)
Cardiovascular diseases	108:109	0.946
Endocrine disorders	73:61	0.300
Respiratory disorders	16:12	0.450
Hematologic disorders	7:6	0.782
Neurological disorders	8:5	0.405
Infectious disorders	7:5	0.564
Skeletal disorders	4:3	0.705
Gastrointestinal disorders	2:4	0.414
Renal disorders	3:2	0.655
Drug allergy	3:2	0.655
Liver disorders	1:1	1.00
Total	232:210	0.295

(1.33%) and Liver disorders (0.53%), respectively. However, in allergy category, most patients were allergic to penicillin followed by sulfa group.

DISCUSSION

As more and more patients with medically compromised conditions are seeking dental treatment, dentists should be prepared to handle such patients. A thorough history taking and physical examination in every patient is important to identify patients with medically compromised conditions, but unaware of them. There may be a modification in treatment plan to suit the individual patient.[8,9] For example, in the first 6 months after acute myocardial infarction, dental treatment should be reserved for emergency situation only or the avoidance of bruising maneuvers during dental treatment in patients with coagulation factor deficiency.[10]

Prescribing medications for medically compromised patients must be carried out with extra care to avoid interference with multiple medications patients are already prescribed and to prevent any undesirable drug interactions.[9] Antibiotic prophylaxis is compulsory for certain dental procedures. Dental setting is regarded as a stressful environment for certain individuals. It would be beneficial to reduce stress in the dental setting when treating this type of patient, especially in hypertensive patients.[8]

The category, which exhibited the highest mean age of 58.57±13.12, was the skeletal diseases category followed by the liver diseases category with a mean age of 56.50±12.02. This reflects the character of these two categories, which are usually encountered in adult or elderly patients, while the neurological disorders category showed the lowest mean age of 31.23±19.90 since some neurologic disorders are congenital abnormalities and can be present at birth or during childhood.

The present study demonstrated male preponderance in most of the categories, even in the generally accepted female predominance diseases such as endocrinal diseases. This phenomenon may be attributable to the fact that males pay less attention to both general health and oral health than females.

The prevalence of medically compromised conditions in dental patients of our hospital in the present study was 1.02%. This figure is rather low when compared with previous studies. Dhanuthai K *et al.,* reported prevalence of 12.2%.[3] Rhodus *et al.,* reported that the prevalence of medical conditions in dental patients increased from 7.3% in 1976 to 24.6% in 1986.[11] Smeets *et al.*, revealed the prevalence of medically compromised patients from the survey of 29,424 dental patients from the Netherlands to be 28.2%.[12] Saengsirinavin *et al.*, disclosed the prevalence of medical conditions in Thai dental patients to be 55.45%.[13] Umino *et al.*, reported that one or more medically compromised conditions were encountered in 64.2% of elderly Japanese dental patients.[14] Nery *et al.*, reviewed 581 periodontal patients' records. The results revealed that the private office group had 27.6% medical problems, the academic dental center had 46.3%, while the hospital dental clinic showed the highest prevalence of 74.1%.[15] The reasons for this may be accounted for by the fact that the present study recruited patients across a wide age range in contrast to most previous studies, which focused exclusively on elderly patients since the prevalence of medically compromised conditions tends to increase with advancing age.

In the present study, Cardiovascular diseases were the most prevalent medically compromised conditions (57.87%) in dental patients as in the studies by Smeets *et al.,*[12] Persson *et al.,*[16] and Jainkittivong *et al.,* (33.7%)[17] A number of previous studies reported that Cardiovascular diseases were the most prevalent medically compromised conditions in dental patients. The most frequent and serious cardiovascular emergencies that can manifest during dental treatment are chest pain (as a symptom of underlying disease) and acute lung edema. Due to the high prevalence and seriousness of these problems, the dental surgeon must be aware of them and should be able to act quickly and effectively in the case of an acute cardiovascular event. In patients with a history of cardiovascular disease, attention must center on the control of pain, the reduction of stress and the use or avoidance of a vasoconstrictors in dental anesthesia. In turn, caution is required in relation to the

antiplatelet, anticoagulant and antihypertensive medication typically used by such patients. Endocrine disorders, the majority of which were diabetes mellitus, came second in the present study (35.73%).

The majority of people in developing countries such as India do not undergo routine medical check-ups. As a consequence, patients harboring asymptomatic medically compromised conditions such as hypertension, heart disease or diabetes mellitus do not realize that they have medically compromised conditions. The present study is a retrospective study conducted by reviewing the patient records. The major drawback of the present study is that it does not conduct the interview and physical examinations, so patients with undiagnosed medically compromised conditions may go undetected. The other reason is that patients with infectious or sexually transmitted diseases such as AIDS may not give accurate medical history for fear that they may be denied dental treatments.

CONCLUSION

Medically compromised patients need more in-depth evaluation, which indeed requires more knowledge of medicine. Patients' medical conditions demand a more detailed assessment and modification of dental management. This is an important issue that leads to reassessing whether medicine should be taught more in-depth in dental schools. Dental schools may have to expand subjects such as management of the medically compromised patients, pharmacology, and medical emergencies. Continuing education courses should emphasize these subjects as well. In dentistry, the curriculum may require modification toward a more medically oriented dental education. Dental educators should reassess their materials and methods of education to make sure that dental practitioners are equipped for the population's requirements for dental care as medical needs change. Knowing about systemic diseases and medications will help dental practitioners to be aware of life-threatening situations that may occur during dental treatment. Therefore, a thorough history taking is mandatory before commencing any dental treatment.

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