

Prevalence of medically compromised patients referred for periodontal treatment to a teaching hospital in Central Saudi Arabia

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ABSTRACT

Objective: Many patients seeking dental care have a significant medical condition that may alter both the course of their oral disease and the treatment provided. The aim of this study was to assess the systemic diseases profile of patients with periodontal diseases for specialized periodontal treatment.

Methods: Seven hundred and forty-three patient's medical records were screened from the Periodontal Clinics and referred to the College of Dentistry, King Saud University, a teaching hospital in Riyadh, Kingdom of Saudi Arabia for a special care during the period from January 2002 to June 2002.

Results: One hundred and sixty-seven were males while 576 were females. The age ranged was from 18-64 years. Approximately 90% of the patients were systemically healthy. The remaining 10% of the patients were with different systemic diseases or sequelae. Diabetes mellitus, hypertension, asthma and rheumatic fever were most commonly present. Thirty-one (4.2%) of the medically compromised were diabetic. Hypertension was reported in 9

(1.2%) patients. Rheumatic fever and asthma were equally present in 7 (0.9%) patients. Periodontal diseases were equally prevalent in both male and female patients. Approximately 50% of the patients had moderate periodontitis while severe periodontitis was common among 9% of the male and female patients.

Conclusion: Diabetes and heart related conditions were most common among the specialist patients referred for periodontal treatment. The advanced periodontitis was prevalent among 9% of the patients. It is recommended that physicians are become more familiar with the systemic associations to periodontal diseases. The dental practitioners should be well versed in the interplay between oral and systemic disease. More extensive knowledge of oral and physical medicine will be needed in order to provide quality care and appropriate treatment of patients with periodontal diseases suffering with systemic conditions.

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Many patients seeking dental care have significant medical conditions that may alter both the course of their oral disease and the therapy provided. The older age of the average periodontal patients increases

the likelihood of underlying disease. Therefore, the therapeutic responsibility of the clinician included identification of the patient's medical problems to formulate proper treatment plans. Thorough medical

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histories are paramount.¹ Systemic conditions and disorders are now considered to be the secondary factors modulating disease initiation or progression instead of acting as primary etiological factors.² Systemic conditions are defined as the naturally occurring or induced states that are expected to exert general effects throughout the body. They may be hormonal, nutritional, genetic, or related to age or comprise drug intake or such habits as smoking. Systemic disorders are true abnormalities or diseases with signs and symptoms that deviate from normal and that define diseases, such as diabetes mellitus (DM).² There are few true epidemiological surveys of systemic disorders in large populations of subjects with appropriate analysis to determine whether these disorders are risk factors for periodontal disease. However, 2 early studies by Sandler and Stahl^{3,4} represent an attempt to determine, which systemic conditions affect periodontal diseases. In the first study,³ alveolar bone resorption was measured in 1300 hospitalized patients and correlated with various diseases, and no differences were seen. In the second study, in a larger sample of 4000 subjects, patients were classified according to their disease status, which was then correlated with periodontal disease.⁴ Among all the diseases assessed including malignancies, respiratory diseases, nervous system diseases and kidney and liver diseases, only patients suffering from diabetes had a statistically significantly higher prevalence of periodontal disease than hospitalized control patients.⁴ The prevalence of DM is approximately 3-7% in the Western countries.⁵ In a recent study,⁶ the prevalence of DM from the Kingdom of Saudi Arabia (KSA) was 2.6% in males and 5.3% in females. In the age group of ≥ 35 the prevalence in males was 8.25% and in females was 19.5%. The aim of this study was to assess the retrospective systemic diseases profile of patients with periodontal diseases referred to the College of Dentistry, King Saud University (KSU), a teaching hospital in Riyadh, KSA for specialized periodontal treatment.

Methods. Seven hundred and forty-three patients medical records were retrieved from the Periodontal Clinics of the College of Dentistry, KSU, who were referred for special care during the first half of the year 2002. One hundred and sixty-seven were males while 576 were females. The age ranged was from 18-64 years. The following medical conditions were noted from their medical records: 1. Valvular disease, 2. angina pectoris, 3. rheumatic fever 4. by pass surgery, 5. hypertension, 6. DM, 7. asthma, 8. renal disease, 9. anemia, 10. hepatitis, 11. tonsillectomy, and 12. thyroidectomy. Periodontal disease was classified according to the world workshop on periodontal diseases classification.⁷ Frequency distributions and percentages were generated. Chi-square test was used for comparison. The age groups were classified as 18-24, 25-34, 35-44, 45-54, and 55-64 years.

Results. Out of 743 patients for specialized care in periodontics, approximately 90% of the patients were healthy without any systemic diseases or history of operation (**Table 1**). The distribution of systemic diseases among male and female patients was showed in **Table 1**. Diabetes mellitus, hypertension, asthma, and rheumatic fever were most common among male and female patients. Thirty-one percent of medically compromised patient were diabetic, while 6% of male and approximately 4% of females were diabetic. Again, anemia was more common among female as compared to male while hypertension was higher among male than female patients. Periodontal diseases were almost the same in both male and female subjects. Approximately 50% of both male and female patients had moderate periodontitis, while severe periodontitis was common among almost 9% of both male and female subjects (**Table 2**).

Discussion. The result of this selective patients population shows DM and cardiac conditions were the 2 most prevalent conditions among the patients. In a recent study from KSA⁶ it has been shown that the prevalence rate of DM was 4.8%. The 4.2% results are closer to the finding, though the study criteria were different. Another study from KSA⁸ showed that prevalence of diabetes is 12-14% among urban males and females population, while in rural population males were 7% and females were 7.7%. Epidemiological studies have demonstrated an association between both types of diabetes and periodontal disease.⁹⁻¹⁰ Individuals with diabetes typically found to have more periodontal attachment loss than non-diabetic subjects, even after correction of confounding factors. However, increased periodontal risk is often related to duration and adequacy of control of the diabetic state.¹¹ The presence of glycated hemoglobin in the circulation and in tissues, resulting from the hyperglycemia of diabetes, is believed to be a contributing factor to the degenerative microvascular and arterial changes that are common sequelae of diabetes.¹¹ A recent study,¹² has shown that severe periodontitis at baseline was associated with increased risk of having poor glycemic control at follow up 2 or more years later. If periodontal disease does affect diabetic status, we could reduce the severity of diabetes.¹¹ The potential effects of periodontal disease on risk of coronary heart disease and stroke continue to be an area of active investigation.¹³ The recognized risk factors for cardiovascular disease, such as hypertension, hypercholesterolemia, and cigarette smoking, do not account for all the variation in the incidence of cardiovascular disease, and other as yet unrecognized risk factors for cardiovascular disease may play a role including several common infections.¹⁴ There is also increasing evidence that one of these potential risk factors may be periodontal disease.¹⁵ Cardiovascular disease and periodontal disease have a number of characteristics in common. For examples,

Table 1 - Prevalence of systemic conditions among male and female patients.

| Medical conditions | Total N (%) | Male n (%) | Female n (%) |
|------------------------|------------------|------------------|------------------|
| Healthy | 666 (89.6) | 140 (83.8) | 526 (91.3) |
| Valvular disease | 5 (0.7) | - | 5 (0.9) |
| Angina pectoris | 3 (0.4) | 2 (1.2) | 1 (0.2) |
| Rheumatic fever | 7 (0.9) | 4 (2.4) | 3 (0.5) |
| Bypass surgery | 1 (0.1) | 1 (0.6) | - |
| Hypertension | 9 (1.2) | 5 (3.0) | 4 (0.7) |
| Diabetes | 31 (4.2) | 10 (6.0) | 21 (3.7) |
| Asthma | 7 (0.9) | 2 (1.2) | 5 (0.9) |
| Renal disease | 5 (0.7) | 1 (0.6) | 4 (0.7) |
| Anemia | 4 (0.5) | - | 4 (0.7) |
| Hepatitis | 3 (0.4) | 1 (0.6) | 2 (0.3) |
| Tonsillectomy | 1 (0.1) | 1 (0.6) | - |
| Thyroidectomy | 1 (0.1) | - | 1 (0.2) |
| Total | 743 (100) | 167 (100) | 576 (100) |
| Significance $p=0.009$ | | | |

Table 2 - Frequency of severity of periodontal diseases among male and female patients.

| Periodontal diseases | Total N (%) | Male n (%) | Female n (%) |
|---|------------------|------------------|------------------|
| Gingivitis | 189 (25.5) | 42 (25.3) | 147 (25.6) |
| Early periodontitis | 123 (16.6) | 35 (21.1) | 88 (15.2) |
| Moderate periodontitis | 364 (49.2) | 75 (45.2) | 289 (50.5) |
| Severe periodontitis | 64 (8.6) | 14 (8.4) | 50 (8.7) |
| Total | 740 (100) | 166 (100) | 574 (100) |
| There is no significant difference. Missing data: one male and 2 females. | | | |

both diseases are more likely to occur in persons who are older, male of lower educational status, have fewer financial resources, who smoke and are hypertensive, stressed and socially isolated. These commonalities suggest that periodontal disease and heart may also share a similar causative pathway. For example, some case control studies have shown an association between cardiovascular disease and indicators of poor oral health.^{16,17} As in present study, cardiac related conditions are also common among patient with periodontal disease so in the light of current knowledge, both physicians and dental practitioners should be aware of the situation and treated or refer patients accordingly. In KSA, there is a significant periodontal disease therapy required for all groups.¹⁸ In another study on periodontal status of patients from a teaching hospital, it was observed that there was a tendency for deep pockets in the 45-55 years age group. Deep periodontal pockets were higher in males than female groups. They also showed that there was a moderate level of periodontal disease in females and severe periodontal disease in males.¹⁹ In contrary to the findings, the present study showed no significant difference in both males and females, as both had same severity of periodontal diseases. This may be attributed to larger sample size or as these patients were exclusively referred for periodontal treatment. In present study, almost half of the patients (49.3%) were suffering from moderate periodontitis. This shows that there is a high need for periodontal treatment among referred patients. It is emphasized that both general dentist and periodontist are needed for proper evaluation and treatment for moderate to severe periodontitis. In the present study, diabetes and cardiac conditions are the 2 most common underlying systemic diseases among patients referred for specialist periodontal care. It is important that both medical professions and general population should be aware of relationship of systemic diseases to oral diseases. Healthy life style should be promoted among general population. Smoking cessation, regular exercise, a low fat diet and good oral hygiene contribute to a healthy cardiovascular system. Patient should understand that the relationship between periodontal and cardiovascular disease is to afford them an opportunity to improve their overall dental and physical health.²⁰ The need of teamwork between the dentist and physician has never been more strongly demonstrated than in the management of the patient with periodontal disease. Continuing medical and dental education should emphasize cross training in both areas to insure comprehensive treatment of the patient with periodontal disease.

In conclusion, DM and heart related conditions were most common among the patients referred for periodontal treatment. Moderate level of periodontal

treatment is most common among male and female patients and there was no difference among gender as far as prevalence of periodontal diseases was concerned. Generally, people should become aware of the systemic consequences of periodontal diseases. The awareness will increase the demand for periodontal services provided by periodontists, general dental practitioners and hygienists. Physicians should become more familiar with the associations of systemic diseases to oral diseases. The physicians should examine the oral cavity and should refer patients with oral and dental diseases to dentist at an early stage. A dental profession should be well versed with interplay between oral and systemic diseases. More extensive knowledge of oral and physical medicine will be needed in order to have more accurately assess risk, make appropriate treatment decisions, render therapy and monitor outcomes.

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