Research Article

Oral manifestations in renal failure patients undergoing Dialysis

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Abstract

Background: Chronic renal failure (CRF) is defined as a progressive decline in renal function associated with a reduced glomerular filtration rate and about 90% patients of renal failure have oral symptoms such as dry mouth, change of taste, mucosal pallor, and uremic odor. Only few studies were performed in patients reported oral health status of CRF. Therefore, need was felt to conduct the study to assess the prevalence of oral manifestations in patients of renal failure undergoing dialysis.

Objective: To assess the prevalence of oral manifestation and to compare the oral manifestations among patients of renal failure undergoing dialysis and healthy patients.

Materials and Methods: The study was conducted in the Department of Oral Medicine and Radiology, Babu Banarasi Das College of Dental Sciences and in Nephrology Department of Sanjay Gandhi Postgraduate Institute of Medical Sciences, Lucknow, Uttar Pradesh, India, between January 1, 2014 and April 1, 2014. Hundred patients enrolled in it were divided into two groups: 50 patients in study group undergoing dialysis and 50 patients in control group comprising healthy individuals.

Result: Oral manifestations and signs and symptoms were more in patients undergoing dialysis than in healthy individuals where unpleasant taste showed highest prevalence followed by uremic odor, xerostomia, and so forth.

Conclusion: This study shows increase in the prevalence of oral manifestations in patients of CRF. As the incidence of CRF continues to rise worldwide, early diagnosis of oral manifestations and their appropriate management can improve the quality of life of patients.

KEY WORDS: Dialysis, uremic odor, mucosal pallor, xerostomia

Introduction

Chronic renal failure (CRF) is defined as a progressive decline in renal function associated with a reduced glomerular filtration rate (GFR).[1] The term renal failure is used primarily to denote failure of the excretory function of the kidneys, leading to retention of nitrogenous waste products of metabolism. Improper kidney function is reflected in every organ system of body, showing various signs and symptoms. About 90% patients of renal failure have oral symptoms, which may be consequences of dialysis and etiological factors causing CRF.[2]

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With advanced disease, greater measures such as dialysis are taken. Dialysis is an artificial means of removing nitrogenous and other toxic products of metabolism from the blood. Dialysis leads to systemic alterations and oral complications.

A wide range of oral signs and symptoms, such as dry mouth, change of taste, mucosal pallor, uremic odor, dental calculus, low salivary flow, and dental caries, have been reported. In addition, oral infections such as candidiasis and recurrent herpes have also been reported. The patients

undergoing renal dialysis showed poor oral hygiene and higher prevalence of periodontal disease.[5,6]

Patients of CRF are more susceptible to infection because of general debilitation and depression of their immunologic response. Both oral disease and dental manipulation create bacteremia that may lead to significant morbidity and potential mortality in patients with renal failure undergoing dialysis.[2]

Promoting good dental hygiene reduces the risk of oral infections. Awareness must be raised among patients undergoing dialysis, their nephrologists, and their dentists about the need for primary dental prevention.

Literature review shows few studies on oral health status of patients of CRF. Therefore, a need was felt to conduct a study to assess the prevalence of oral manifestations among group of patients with renal failure undergoing dialysis.

Objective

- To assess the prevalence of oral manifestations in patients with renal failure undergoing dialysis and healthy patients.
- To compare the oral manifestations between patients with renal failure and healthy, disease-free individuals.

Materials and Methods

This study was conducted in the Department of Oral Medicine and Radiology, Babu Banarasi Das College of Dental Sciences and in Nephrology Department of Sanjay Gandhi Postgraduate Institute of Medical Sciences, Lucknow, Uttar Pradesh, India. Ethical clearance to conduct study was obtained from institutional ethical committee.

Examination of Patient

- Control subjects were made to sit comfortably on a dental chair and were examined under artificial illumination and study subjects were examined at bedside for patient convenience. The clinical examination was carried out following the method described by Kerr, Ash, and Millard.
- Intraoral examination was performed to evaluate oral manifestations and dental status in both the groups, and findings were recorded in predesigned pro forma.
- Subjects from both the group underwent laboratory investigations that included serum creatinine, GFR, serum sodium, serum calcium, serum potassium, and the values were recorded.
- All the relevant data were recorded, tabulated, and subjected to statistical analysis.

Statistical Analysis

A Statistical Package for the Social Sciences software program (SPSS, Chicago, IL) was used for statistical analysis. χ^2-Test was used to examine the significance of the differences in means and distribution of categorical variables between groups. The level of significance was set at *p*-value of >0.05.

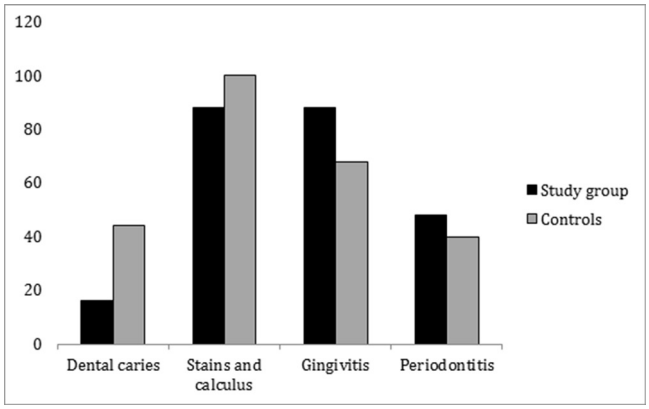

Figure 1: Distribution of dental status between study group and controls.

Results

Age

The age of patients ranged between 18 and 70 years. The age group between 41 and 50 years showed the highest prevalence with 32% patients undergoing dialysis and 38% healthy patients. The age group more than 50 years contained 26% patients undergoing dialysis and 10% healthy patients. The mean age in study group and control group was 43.24 (±13.40) and 39.52 (±10.28) years, respectively.

Gender

Of the total subjects, in patients undergoing dialysis, 72% were men and 28% women, whereas in healthy patients 74% were men and 26% were women. It shows that the male-to-female ratio was similar ($p > 0.05$) in study group and controls, thus both the groups were comparable in terms of gender.

Oral Manifestations

The total number of patients that suffered oral lesion contributed to 26 patients (52%) and rest of the patient did not had any oral mucosal lesion that contributed to 24 patients (48%).

Dental caries was observed in 16% patients undergoing dialysis and in 44% healthy patients. Stains and calculus were observed in 88% patients undergoing dialysis and in 100% healthy patients. The gingivitis was higher in patients undergoing dialysis than in healthy patients, which was 88% in study group and 68% in controls. This was statistically significant. The presence of periodontitis was also higher among study group compared with controls [Figure 1].

Unpleasant taste was present among majority of the patients (86%) undergoing dialysis, whereas it was nil in healthy individuals followed by uremic fetor that constituted 31% patients undergoing dialysis. However, xerostomia and burning sensation were present among 46% patients undergoing dialysis and burning sensation was present in 14% healthy

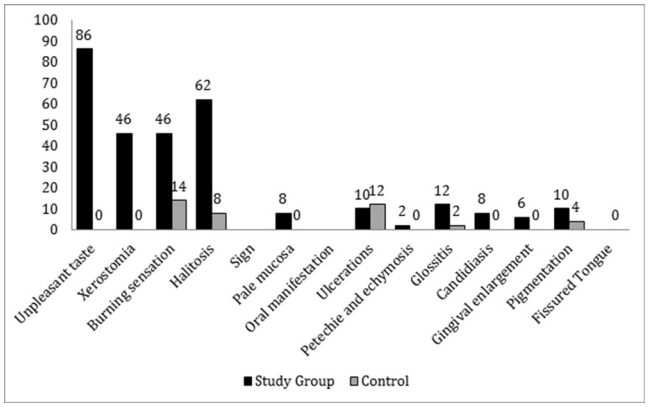

Figure 2: Comparison of oral manifestations and lesions between study group and controls.

individuals. Pale mucosa was present only in 8% patients of the study group whereas it was nil in controls. Glossitis was found in 12% patients of the study group, and ulcerations and pigmentation were in 10% each. The percentage of candidiasis, gingival enlargement, and petechiae and ecchymosis was less than 10% in patients undergoing dialysis whereas it was nil in healthy individuals. The difference between both the groups was found to be statistically significant ($p > 0.0088$) [Figure 2].

Discussion

A wide range of oral signs, symptoms, and lesions have been reported in patients undergoing dialysis. In this study, 100 subjects (50 patients undergoing dialysis and 50 healthy patients) were included aged between 20 and 70 years with mean age of 43.24 ± 13.40 years in study group and 39.52 ± 10.28 years in controls. Similar studies were conducted by Bayraktar et al. (2007)[30] and Agarwal and Srivastava.[7] The increase in chronic kidney disease was observed due to decreased renal function in older persons as aging leads to several changes in body that impact kidney function, which declines with age.

The male-to-female ratio in the this study in both the groups was 2:1; the study group comprised 36 (72%) men and 14 (28%) women whereas the control group comprised 37 (74%) men and 13 (26%) women, which was in accordance with the studies conducted by Proctor et al.[6] and Klassen and Krasko.[4]

In the group with CRF, oral lesion was diagnosed in 26 (52%) patients whereas in about 24 (48%) it was not present. In this study, dental caries was observed in 8 (16%) patients with renal failure and in 22 (44%) patients of the control group. Similar results were observed in studies conducted by Bayraktar et al. (2008),[30] Klassen and Krasko,[4] and Gautam et al. (2014).

Gingivitis showed higher prevalence in study group (44 patients; 88%) than in controls (34 patients; 68%), which was statistically significant ($p > 0.02$). Periodontitis was also higher among patients undergoing dialysis than among healthy patients. These results are in accordance with the studies conducted by Gavalda et al. (1999) and Davidovich et al.[5]

In this study, unpleasant taste showed highest prevalence in 43 (86%) patients undergoing and it was nil in healthy individuals. Similar results were observed in the studies conducted by Dirschnabel et al.[3] and Kho et al.[8] In this study, uremic fetor was present in 31 (62%) patients undergoing dialysis and it was nil in healthy controls. Similar findings was reported by Kho et al.[8]

Xerostomia and burning sensation were observed in 23 (46%) patients in dialysis group, whereas xerostomia was nil and burning sensation was present in 7 (14%) healthy controls. A similar study was conducted by Kho et al.[8] and Dirschnabel et al.[3] Xerostomia occurs due to restriction in fluid intake, the side effects of drugs (fundamentally antihypertensive agents), direct salivary gland alteration, salivary gland atrophy, and fibrosis.[7]

In this study, ulcers were present in 5 (10%) patients of the study group whereas in 6 (12%) patients of the control group. Similar results were reported by Kho et al.[8] In this study, glossitis was observed in 6 (12%) patients of the dialysis group and in 1 (2%) healthy control. Similar results were reported by Zohreh Hajheydari and Atieh Makhlough (2008).

In this study, candidiasis was observed in 4 (8%) patients of the dialysis group whereas atrophic candidiasis showed highest prevalence and nil in controls. Similar results were observed in a study conducted by Dirschnabel et al.[3]

In this study, pallor of oral mucosa was observed in 4 (8%) patients of the dialysis group whereas it was nil in controls. Similar results were observed by Patil et al.[2] and Dirschnabel et al.[3] In this study, gingival enlargement was observed in 3 (6%) patients undergoing dialysis and it was nil in controls. Similar results were reported by Dirschnabel et al.[3]

This study showed petechiae and ecchymosis in 1 (2%) patient undergoing dialysis and these were nil in healthy controls. Similar results were reported by Kho et al.[8] and Patil et al.[2]

Conclusion

In this study, patients of CRF presented with various oral manifestations. Among them unpleasant taste was detected on maximum patients (43; 86%) followed by uremic fetor in 31 patients (62%), xerostomia and burning sensation in 23 (46%), glossitis in 6 (12%), ulceration and pigmentation in 5 (10%), candidiasis and pale mucosa in 4 (8%), gingival enlargement in 3 (6%), and petechiae and ecchymosis in 1 (2%). This study shows increase in the prevalence of oral manifestations in patients with CRF. As the incidence of CRF continues to rise worldwide, early diagnosis of oral manifestations and their appropriate management can improve the quality of life of patients.

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