ORIGINAL RESEARCH

Oral View of Chronic Renal Failure – A Cross Sectional Study.

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Abstract

Introduction: A study on oral findings of chronic renal failure patients

Aims and Objectives: To analyze the oral manifestations of chronic renal failure patients.

Materials and Methods: Our cross sectional study group consists of 100 chronic renal failure patients. The demographic features including age and genders were included in this study. Patients with Chronic renal failure were included in this study.

Results: Among the 100 chronic renal failure patients in our study 66% were males and 34% females. The minimum age of 13 years and the maximum age of 73 years were observed in this study. Among the 100 chronic renal failure patients 21% were up to 30 years, 18% within 30 to 40 years, 24% within 40 to 50 years, 25% within 50 to 60 years and 12% more than 60 years.

Conclusion: Drug asssociated oral manifestations like xerostomia, metallic taste, gingival hyperplasia were predicted in our study which highlights that those medications for renal failure are at high risk for these adverse effects.

Keywords: Chronic renal failure, Dialysis, Oral manifestations, Oral view

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Introduction

The kidneys play a vital role in body function, not only by purifying the blood and getting rid of waste products, but also by balancing the electrolyte levels in the body, controlling blood pressure, and stimulating the production of red blood cells. They filter metabolic waste products like urea from protein metabolism and uric acid from DNA breakdown. The kidneys have the ability to monitor the amount of body fluid, the concentration of electrolytes like sodium and potassium, and the acid-base balance of the body.

Chronic renal failure is defined as a progressive decline in renal function associated with a reduced glomerular filtration rate leading to an increase of serum creatinine and blood ureic nitrogen levels. Worldwide there is increase in number of patients with chronic renal failure, more likely the oral health care staff should provide care for patients with such disease.[1] Chronic renal failure can give rise to a wide spectrum of oral manifestations, affecting the hard or soft tissues of the mouth. Chronic renal failure and its treatment have systemic and oral manifestations. The isolation of candida was more significant in patients on haemodialysis and in kidney transplant recipients in comparison with healthy individuals. This might be due to the immune suppression in such patients.[2]

Patients with chronic renal failure had significantly fewer fungiform taste buds, suggesting an important factor contributing to the well-known impairment of taste activity.[3]

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Conflict of Interest: None

Materials and Methods

Our cross sectional study group consists of 100 chronic renal failure patients. The demographic features including age and genders were included in this study. Patients with Chronic renal failure were included in this study. 33% of the patients with other systemic conditions were also included in the study.

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Results

Among the 100chronic renal failure patients in our study 66% were males and 34% females. The minimum age of 13 years and the maximum age of 73 years were observed in this study. Among the 100 chronic renal failure patients 21% were up to 30 years, 18% within 30 to 40 years, 24% within 40 to 50 years, 25% within 50 to 60 years and 12% more than 60 years. In the present study of 100 chronic renal failure patients, 15 % of the patients had halitosis, 14 % of the patients showed xerostomia. Periodontitis was present in 13% of the patients. The association of oral Leukoplakia was in 10% of the patients, 9 % of the patients had depapillation in tongue. Gingival Enlargement was seen in 7% of the patients. Bad Taste sensation was in 6% of the patients and oral candidiasis was present in 5 % of the patients. [Table 1 and Graph 1].

Discussion

Like other systemic conditions, chronic renal failure can cause oral manifestations. Patients with chronic renal failure may present as unique signs of multisystem disease affecting the kidneys.

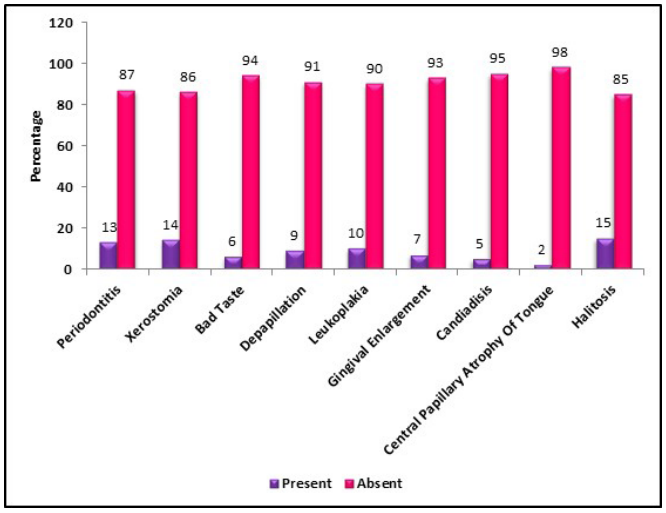
The prevalence of oral lesions in renal failure patients increase with accompanying systemic diseases. For example diabetic uremic patients have more oral manifestations compared with non-diabetic uremic patients.[4]

In chronic renal failure patients impaired renal function can lead to different hematologic and metabolic disorders, which involve oral cavity and jaw bones. All those changes in the oral cavity were observed in our study as well.

Halitosis

Uremic patients may have ammonia like odor, which also occurs in about one third of individuals undergoing hemodialysis. The prevalence of persistent oral malodor in a recent Brazilian study was reported to be 15% which match with our study showing the prevalence of same 15% in Indian population and they found that halitosis is common and can affect people of all ages.[5]

Graph 1: Oral Manifestations with percentage



The prevalence of oral malodor was three times more common in males than in females and the risk was slightly three times higher in people above 20 years of age compared with those aged 20 years or below.[3] In our study 12 patients were males and 3 patients were females, the association between the presence of halitosis with respect to gender is coherent with their study.

A review found 30% of patients had halitosis which is inconsistent with our study showing only 15%.[6,7]

Tessier JF et al estimated that more than 50% of the population has halitosis which differed with our study.[8]

Xerostomia

Xerostomia or dry mouth is the abnormal reduction of saliva and can be a symptom of certain diseases or be an adverse effect of certain medications.

Symptoms of xerostomia can arise in many individuals receiving hemodialysis.[9] Possible causes include restricted fluid intake, side effects of drug therapy and/or mouth breathing.

Mosannen Mozaffari et al stated the possible causes for xerostomia is a combination of salivary gland involvement, inflammation, drug adverse effects (antihypertensive drugs), dehydration and mouth breathing.[10] And suggested that xerostomia is a common finding with a prevalence of 73.2% in renal failurepatients which is not in agreement with our study where in only 14% of patients had xerostomia.

Madiha Sanai et al suggested that xerostomia is the most common oral finding in chronic renal failure patients.[11]

Periodontitis

Periodontal disease is prevalent and mostly unidentified in renal failure patients. Subjects on renal dialysis were at high risk for developing periodontal disease. It is recommended that, patients on dialysis should be periodically examined by dentist for oral health. Altered cellular immunity along with malnutrition leads to an immunodeficiency state in uremia.[12]

In the sight of Ismail Marakoglu et al[13] host factors such as systemic diseases, genetic polymorphism and drug usage play

Table 1: Oral Findings With Percentage

Findings	Present		Absent		Total
	N	%	N	%	
Periodontitis	13	13	87	87	100
Xerostomia	14	14	86	86	100
Bad Taste	6	6	94	94	100
Depapillation	9	9	91	91	100
Leukoplakia	10	10	90	90	100
Gingival Enlargement	7	7	93	93	100
Candiadisis	5	5	95	95	100
Central Papillary Atrophy Of Tongue	2	2	98	98	100
Halitosis	15	15	85	85	100

a major role in the pathogenesis of periodontal disease by modifying the host response to periodontal infection or altering the susceptibility to infection by periodontal organisms.

Patients receiving hemodialysis have been suggested to present a certain degree of immunosuppression. Based on the findings chronic renal failure does not seem to be an additional risk factor for more severe periodontal destruction and this was consistent with our study where only 13% of patients had periodontitis which is not statistically significant.

In a study conducted by Klassen J T and Krasko B M[14] who evaluated 45 patients who were undergoing hemodialysis and reported that 100% of them presented some type of periodontal disease which does not correlate with our study. They also found in their study chronic renal failure patients had poor oral hygiene than the healthy individuals presenting with greater calculus formation and gingivitis.

Increased dental calculus has been observed due to high salivary urea and phosphate level.

Leukoplakia

Before the era of dialysis, Leukoplakia and oral candidiasis were not uncommon in patients with advanced renal failure, because hemodialysis could affect the oral microflora. They found isolation of candida was more significant in patients on hemodialysis in comparison to healthy individuals, which might be due to the immunodeficiency in these patients as referred by Azadeh Ahmadieh et al.[9]

In a study carried out by Gaston N King[15] out of 159 patients, 23 lesions of the vermillion border of the lip were detected in renal failure patients with increased prevalence for Leukoplakia, dysplasia, and squamous cell carcinoma. The increased rate of Leukoplakia in renal failure patients was a consequence of their immunosuppression or drug therapy although the mechanism remains obscure. In our study 10% of the chronic renal failure patients were with leukoplakia.

Gingival enlargement

Clinical manifestations of gingival enlargement frequency appear within one to three months after initiation of treatment with the associated medications

In immunosuppressed individuals sometimes papillary lesions appear on the surface of the gingiva, which have been associated with the presence of candida hyphae invading the gingival epithelium.[16]

The main cause of gingival enlargement is cyclosporine and calcium channel blocker such niphedipine. An analysis summarized that gingival enlargement was more severe in patients taking both drugs.[14]

The association between cyclosporine A and gingival overgrowth is well established with studies reported. Most studies report gingival hyperplasia to be associated with increased cyclosporine dosage.[15] In our study 7% of the patients were found with gingival enlargement.

Bad taste

One of the early symptoms may be a metallic taste and unpleasant odor in the mouth particularly in the morning.

Uremic fetor, an ammonical odor is a typical sign of all uremic patients which is caused by the high concentration of urea in the saliva and its subsequent breakdown to ammonia.[10]

Approximately 30% of patients with advanced chronic renal disease were reported to have a bad or a metallic taste in their mouth, which has been associated with metabolic changes, diverse drugs, a reduced number of taste buds and change in both salivary flow[12]. In our study 6% of the patients were found with altered taste.

Candidiasis

As a result of long term immunosuppression therapy, patient's immune response is reduced which makes them more susceptible to develop infections. Fungal infection has the highest degree of mortality rate despite its lower incidence compared to bacterial and viral infection. There is an increased prevalence of oral candidiasis and the cause is usually the species candida albicans.[19]

Hemodialysis could affect the oral microflora. They found isolation of candida was more significant in patients on hemodialysis in comparison to healthy individuals, which might be due to the immunodeficiency in these patients.[20]

The association of candidiasis and smooth tongue could suggest malnutrition predisposing to Candida infection.[21] Erythematous candidiasis was the most common type in most cases occurring on dorsum of the tongue.[22] In our study 5% of the patients were found with candidiasis.

Central papillary atrophy of the tongue

This is also called median rhomboid glossitis. The posterior dorsal point of fusion is occasionally defective, leaving a rhomboid shaped, smooth erythematous mucosa lacking in papilla or taste buds. This central papillary atrophy is a focal area of susceptibility to recurring or chronic atrophic candidiasis.[23, 24, 25] In our study 2% of the patients were found with central papillary atrophy of tongue.

Conclusion

Drug associated oral manifestations like xerostomia, metallic taste, gingival hyperplasia were predicted in our study which highlights that those medications for renal failure are at high risk for these adverse effects.

Other conditions such as halitosis, periodontitis, leukoplakia, depapillation, candidiasis, central papillary atrophy of tongue were also identified in our study which may be related to immunosuppression.

Further course of the study can be conducted by comparing the incidence of oral lesions between different categories of renal patients and with wider sample size which gives better conclusion to confirm that these manifestations are solely due to renal failure and also aid in early institution of appropriate oral health care which could prevent the progression of these conditions which otherwise might culminate in loss of teeth and malignancies.

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