Oral Findings in Chronic Kidney Disease In Nephrology Department Sandeman Provincial Hospital, Quetta

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ABSTRACT

Background: The importance of oral health care in the management of patients with systemic diseases including chronic kidney disease (CKD) has been affirmed. Many CKD patients have related oral lesions, however, attention to oral health care has been lacking, especially in the developing countries with higher burden of renal diseases.

Objective: Current study was performed to evaluate the oral manifestations in patients with CKD on dialysis in Nephrology Department Sandeman Provincial Hospital Quetta, Pakistan.

Material and Methods: Fifty patients with CKD were recruited, interviewed and examined. Oral mucosa assessment was based on the WHO Guide to Epidemiology and diagnosis of Oral Mucosal Diseases.

Results: Out of fifty patients, 32 were males and 18 were females. Mean age was 50.4.The most common oral findings in the CKD patients in this study were geographic tongue (80%) candidiasis (72%) dry mouth and abnormal taste (70%), dental caries (68%) and bleeding gum (54%). CKD patients showed significantly more oral changes these changes could be attributed to metabolic disturbances due to renal failure.

Conclusion: The higher prevalence of oral manifestations in CKD patients necessitates mandatory oral screening to identify patients with deteriorating renal function. The management of such lesions, sign and symptoms will enhance the overall well being of CKD patients in developing countries. Regular oral checkup is recommended for the better oral health in these patients and that will improve the compliance to oral drug therapy, which in turn will promote the quality of life of CKD patients on dialysis with minimal complications.

Keywords: *chronic kidney disease, oral lesions, xerostomia and bleeding gum*

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INTRODUCTION

The Oral cavity is an important anatomical location with in the alveolar margins of maxilla and mandible and plays a vital role in many important physiologic processes, such as mastication, phonation, digestion and respiration. Oral cavity holds the presence of exposed hard tissue surrounds by oral mucosa. The oral cavity might act as opening to the body because oral manifestations accompany a wide range of systemic diseases of body. Oral cavity is an important diagnostic tool in the clinical diagnosis of systemic diseases. Chronic kidney disease is defined as a gradual decrease in kidney function in relation with a reduced glomerular filtration rate. CKD is known by nephron destruction or dysfunction. Nephron is the vital functional unit of kidney. If nephrons are destroyed, they cannot be regenerated or compensated and if it needs compensation there is hypertrophy of the other nephrons of kidney in order to maintain the kidney function. The hazardous factors for CKD are, hypertension, diabetes mellitus, cardiovascular disease, family history for CKD and age over 60 years[1].

The term kidney dysfunction is used mainly to describe dysfunction of the excretory functioning of nephrons, which leads to the consumption of nitrogenous waste products in metabolism. Kidney dysfunction may affect in every system of body, shows different signs and symptoms. About 90% patients of kidney failure patients manifests with oral symptoms, that may be the after effect of kidney dialysis and causational factors leading to chronic kidney failure. With advanced measures, better treatment such as dialysis is productive. Renal dialysis is an counterfeit means, that remove the toxic nitrogenous and other waste products of metabolism from the blood stream. Renal dialysis directs the systemic changes and oral manifestations. About 90% of kidney failure patients have oral symptoms and diseases which may be the after effect of renal dialysis and kidney transplantation and causative factors that leads to the chronic kidney dysfunction or failure[2]. A large amplitude of common oral health problems, most like dryness in mouth, change in taste, mucosal pallor, uremic odor, dental calculus, decrease salivary flow, and dental caries, have been reported. Moreover, oral infections and diseases such like candidiasis and recurrent herpes have

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also been reported. The patients encounter with kidney dialysis more likely related with poor oral hygiene and increase ascendancy of periodontal diseases[3,4].

Patients suffering from CKD are more uncertain to infections because of common attenuation and tension of their immunologic counter. Both oral disease and dental abetment may cause bacteremia and may lead to denoting desolation and potential expressed in patients having kidney failure abide dialysis[5]. Generally, according to research Oral infections in systemic conditions includes periodontitis, white lesions, red lesions, oral candidiasis, burning sensation, changes in salivary composition and flow rates, pale mucosa and abnormal pigmentation. Due to the presence of these particular oral lesions its not only helpful in diagnosis of following systemic conditions may also indicate the sternness of such systemic diseases. Moreover, significant enhancement in systemic health has been viewed according to the treatment of related Oral diseases[6]. CKD many other systemic conditions, related to oral diseases that are rising from the disease conditions or the effects of the therapy or both. Considerably, Oral lesions not treated may aggravate the clinical presentation and prognosis[7].

The reason effect relationship between Oral infections and systemic diseases is yet to be fully established, however significant improvement in the underlying systemic diseases has been viewed following treatment of followed oral lesions[8]. This is a pointer to the importance of Oral health care in the management of systemic diseases. In the developed countries, there are guidelines for Oral health care in patients with systemic diseases[9]. The opposite is the case in the developing countries where improper attention has been given to oral health care needs in this group of patients and this has more worsened the prognosis of the disease. Poor Dental awareness among the patients and some Medical colleagues are important and related factors[10].

This study investigated Oral lesions in CKD in our environment and the association with renal functional diseases. An Oral health care protocol for the treatment of CKD patients was also given. By Promoting good Dental hygiene decrease the risk of Oral infections. Awareness and knowledge must be raised among patients undergoing renal dialysis, their nephrologists, and their Dentists about the need for primary dental prevention and treatment. Literature review reports few studies on Oral health status of patients of CKD. The importance of Oral health care in the management of patients with systemic diseases including CKD. Many CKD patients have related Oral lesions, however, attention to awareness of health care lacking, especially in the developing countries with increased burden of renal diseases. Therefore, a need was felt to conduct a study to assess the prevalence of Oral manifestations among group of patients with CKD in Nephrology Department Sandeman Provincial Hospital Quetta.

The objective of current study was performed to evaluate the Oral manifestations in patients with CKD in Nephrology Department Sandeman Provincial Hospital Quetta.

MATERIALAND METHODS

The study protocol was reviewed and the head of Nephrology Department granted the permission. Patients who met the inclusion criteria were informed about the study after which a signed consent was obtained. Information on patients' bio-data, relevant Medical history, drug history, alcohol and tobacco consumption were noted.

The study group consisted of patients diagnosed with chronic renal failure and end stage renal disease. This group was randomly selected from the pool of CKD patients being managed by the Nephrology Department Sandeman Provincial Hospital Quetta. Subjects selected were 18 years and above with no co-morbid medical conditions like diabetes mellitus and primary hypertension as well as negative history of cigarette and alcohol consumption.

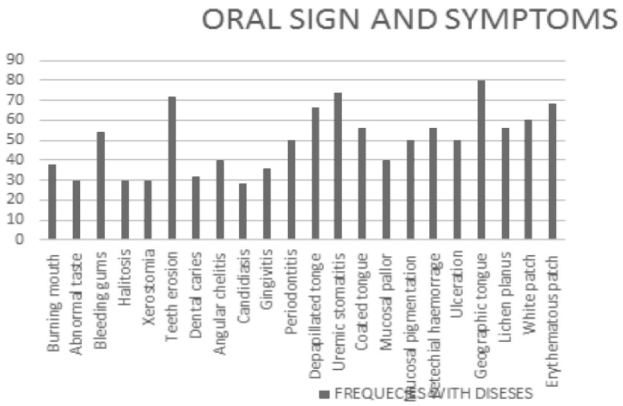
Fifty patients Male and Female were recruited interviewed and oral cavity examined in Nephrology Department Sandaman Provincial Hospital Quetta. Oral Mucosa assessment was based on the WHO Guide to Epidemiology and Diagnosis of Oral Mucosal Diseases[11].

RESULTS

50 patients participated in this study, 32 (64%) males and 18 (36%) females. the mean age of the respondent was 50.4 years. Majority of the patients were age between 37 to 46 years (32%) table 1.

On oral examination teeth erosion, uremic stomatitis and geographic tongue were noted in majority of the patients. Details of Oral sign and symptoms can be seen in fig 1.

Fig 1. Frequency of Oral signs and symptoms in 50 CKD patients.



Oral soft tissue lesions:

Geographic tongue was the most frequent lesion seen in this study 40 (80%), while uremic stomatitis and teeth erosion each 36 (72%) out of 50 CKD subjects. In current study the Erythematous patches was noted in 34 (68%) of the patients and depapilated tongue 32 (64%). Petechial hemorrhage and coated tongue were seen each in 28 (56%), and mucosal pigmentation was observed 25 (50%), while Candidiasis was showed only 14 ((28%). In this study there was no statistically significant between Oral lesions and CKD patients Table 2.

Table 1. Age distribution

Age groups		Frequency	Percent (%)
	07 - 16 years	1	2.0
	17 - 26 years	3	6.0
	27 - 36 years	7	14.0
	37 - 46 years	16	32.0
	47 - 56 years	11	22.0
	57 - 66 years	10	20.0
	67 - 76 years	2	4.0
	Total	50	100.0

Table 2. Oral soft tissue lesions

Characteristics	CKD n=50+Percentage	P-value
Burning mouth (in%) • Present • Absent	19(38) 31(62)	0.473
Abnormal taste (in%) • Present • Absent	15(30) 35(70)	0.495
Angular chelitis (in %) • Present • Absent	20(40) 30(60)	0.441
Bleeding gums (in%) • Present • Absent	26(52) 24(48)	0.620
Halitosis (in%) • Present • Absent	15(30) 45(70)	0.495
Xerostomia (in%) • Present • Absent	15(30) 35(70)	0.495

Teeth erosion (in%) • Present • Absent	36(72) 14(28)	0.226
Dental caries (in%) • Present • Absent	16(32) 34(68)	0.513
Candidiasis (in %) • Present • Absent	14(28) 36(72)	0.437
Gingivitis (in %) • Present • Absent	32(64) 18(36)	0.261
Periodontitis (in %) • Present • Absent	25(50) 25(50)	0.551
Depapillated tongue (in %) • Present • Absent	32(64) 18(36)	0.261
Uremic stomatitis (in %) • Present • Absent	34(74) 16(26)	0.208
Coated tongue (in %) • Present • Absent	28(56) 22(44)	0.459
Mucosal pallor (in %) • Present • Absent	20(40) 30(60)	0.441
Mucosal pigmentation (in%) • Present • Absent	25(50) 25(50)	0.551
Petechial Hemorrhage (in %) • Present • Absent	28(56) 22(44)	0.459
Ulcerations (in %) • Present • Absent	25(50) 25(50)	0.551
Geographic tongue (in %) • Present • Absent	40(80) 10(10)	0.184
Lichen planus (in %) • Present • Absent	28(56) 22(44)	0.582
White patches (in %) • Present • Absent	30(60) 20(40)	0.152
Erythematous patches (in %) • Present • Absent	34(68) 16(32)	0.284

DISCUSSION

Oral cavity is the mirror of systemic health. Far-flung ranges of Oral signs and symptoms and lesions have reported in patients with chronic kidney diseases undergoing dialysis. The oral lesions are an aftermath of toxins in the tissue or to the action of ammonia or to irritating ammonium compounds formed by the action of bacteria on urea. The most common causes are diabetes, hypertension, autoimmune diseases and chronic glomerulonephritis. About 90% of patients on dialysis show oral sign and symptoms.in this study majority of the patients were Male (64%) while female were (36%) The most common soft tissue lesions were seen in this study like gingivitis, uremic stomatitis, erythematous patches and geographic tongue. According to clinical variables teeth erosions were noted 72% and xerostomia 30% in CKD patients. In CKD there is usually fluid restriction, electrolytes imbalance and use of medications these may contribute to the complaint of a dry mouth seen in renal patients. This was disagreement with the study conducted by patil et al from India reported the prevalence of dry mouth was 91% with CKD patients (5). While Melakmakan and their colleagues from Iran reported Xerostomia in 48.6% in chronic renal patients[12]. In this study gingivitis was noted 64% of patients. A study conducted in India reported the prevalence of gingivitis in CKD patients were 24% this was the contrast of my study because patients with systemic diseases almost disregard their oral hygiene[13]. Mucosal pallor in current study was observed in 40% patents. Much higher frequency (83%) was reported in a study by Belazelkovska and colleagues in 2013 while Patil et al reported mucosal pallor in 87% patients which is more than twice than the findings in current study[10,14]. Abnormal taste was found in 30% of CKD patients. While Uzma et al showed 48% half frequency than in present study[1]. Coated tongue was seen in 56% patients in current study. Murali et al in 2012 and Uday Kumar et al reported coated tongue as 11%, which that was discripant with our findings[15,16]. While Belazelkovska et al 2013 reported that 100% patients in his study had coated tongue (14). While this finding is quite higher than current study. Mucosal pallor was noted in current study 40%. Much higher frequency (83%) was reported in a study by Belazelkovska and colleagues in 2013 while Patil et al reported mucosal pallor in 87% patients which is more than twice than the findings in current study. Mucosal pallor is secondary to the anemia precipitated by a lack of erythropoietin production, bone marrow depression and reduced red cell survival times[10,14].

Angular cheilitis is a finding in current study that was seen in 40% in the current study, while Belazelkovska et al in 2013 reported angular cheilitis (63%) quite high numbers from current study and Uday kumar et al in 2006 reported 12% which is the disagreement of the current study while Murali and colleagues reported angular cheilitis in only 2% patients quite disconcodantly with current study[15,16]. In the present study 32% subjects had dental caries. Were also of opinion that massive amounts of urea in saliva led to increased neutralizing capacity, thus release of free amino acids would be inhibited once the plaque become saturated with urea. Since the salivary urea concentration remains quite high even after dialysis, it could conceivably sustain this Cariostatic effect. Salivary urea had been shown to inhibit caries because of its antibacterial properties and its inhibitory effect on plaque formation[17,18]. In this study ulcers were present in (25%) patients, while a study conducted by Kho et al reported (12%) of oral ulceration in CKD patients, this findings is twice less than the current study[19]. This study showed petechial hemorrhage in (56%) patients because when kidney become compromise during CKD erythropoietin hormone will be deficient in plasma level that is responsible aggregation platelets from bone marrow. This manifestation may be due to bleeding tendency because of abnormal thrombocyte function and a decrease in platelet factor III. It may also relate to the anticoagulants used during hemodialysis. A study conducted by Patil et al showed petechiae and ecchymosis in 1 (2%) patient undergoing dialysis or CKD this is the disagreement of current study (5). Oral Candidiasis was noted in CKD patients (28%). Candidiasis or Oral fungal infections may be due to immune suppression from malnutrition, restricted diet, anemia, stress and immunosuppressive drugs. A study conducted by Royne et al showed (37%) of Oral Candidiasis among CKD patients. This finding was little bit higher than the current study[20]. Bleeding was seen (52%) in this study and has been attributed to poor oral hygiene, gingival and periodontal inflammation and bleeding abnormalities. While Ruospo et al found (26%) bleeding among CKD patients this is disagreement of the current study[21].

In conclusion the prevalence Oral lesions was higher in CKD subjects may be due to restricted diets, malnutrition, mouth neglect, immunosuppression and the effects of medications and uremic toxins on the oral tissues.

CONCLUSION

A proper examination of the oral cavity in patients with CKD is invaluable to diagnosis at an early stage of multi systemic diseases. Therefore these patients should be routinely evaluated for oral lesions and treated accordingly. The dental management of patients with renal diseases is complicated by systemic consequences of renal failure particularly anemia, bleeding tendency, cardiovascular or endocrine diseases, but the use of proper treatment protocol the dental management in these patients can be effective and safe. A simple routine examination of the oral cavity should become the norm of all clinicians caring for renal patients.

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