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Oral Manifestations in Chronic Kidney Failure Patients

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Abstract

Objective: Study was undertaken to analyse the various oral manifestations in Chronic Renal Failure Patients.

Methods: Eighty patients treated in the Hospitals attached to Bangalore Medical College and Research Institute were studied. Information about oral and systemic health condition were collected. Data from each group were collected and analysed. Chi Square test were used and level of significance was kept at 5%. Significance was considered if $p<0.5$.

Results: 97.5% had oral complaints and 2.5% had no oral complaints. Most prevalent oral manifestation was Xerostomia (68.8%) followed by Poor Oral Hygiene(60%), Mucosal Pigmentation(47.5%), Mucosal Pallor(32.5%), Uremic Foetor(37.5%), Coated Tongue(37.5%), Thickened Mucosa(15%), Angular Cheilitis(5%) and Candidiasis(2.5%) .

Conclusions: These findings in substantiates the need for comprehensive professional oral care as well as self-care instruction in CKD patients on dialysis as oral disease is a source of active infection in these medically compromised individuals and itself is responsible for additional morbidity and mortality. Therefore they should be routinely evaluated for Oral lesions and should be treated accordingly.

Keywords: Chronic renal disease, Xerostomia , Mucosal Pallor, Oral manifestations

Introduction:

Oral cavity is considered to be the reflector of systemic health. The diseases of the renal system pose a major cause of morbidity and mortality worldwide, since kidneys play a vital role in maintain stable internal milieu(1)

CKD patients have various spectrum of systemic manifestations, one such spectrum of manifestations is that of oral cavity and hygeine1.(2)

The oral manifestations observed in chronic renal failure and associated therapies are altered taste, xerostomia, parotitis, gingival enlargement, enamel hypoplasia, various mucosal lesions like hairy leucoplakia, lichenoid reactions, ulcerations, angular cheilitis, candidiasis etc.4(3)

A routine examination of the oral cavity in patients with CKD often aids in diagnosis of multi-system disease at an early stage. Hence a routine proper oral examination is must in these patients in diagnosis so that disease can be treated accordingly. These oral lesions are not only helpful in detecting underlying systemic diseases but also indicate their severity(4). It also observed that there is considerably good improvement in systemic health following the treatment of associated oral lesions.(5,4) Neglected and

untreated oral lesions have been linked to worsening prognosis in CKD patients.[4]

Improvements in dialysis and transplantation have reduced morbidity and mortality among patients with end-stage renal disease in the last 3 to 4 decades needing more attention to other areas of health aspects such as Coronary Artery disease, cancer screening, oral health, etc. to improve their quality of life. Due to the lack of attention to these oral aspects in CKD patients, they have been exposed to deleterious consequences and have been devoid of the merits associated with the treatment [6].The increased Inflammatory burden and Increased Graft rejection rates in transplant recipients [6]which is responsible for the worsening underlying systemic disease are consequences of untreated oral lesions in CKD.[4]

Thus, we conducted a study which will provide data on oral manifestations of renal diseases, particularly in patients undergoing haemodialysis and to evaluate clinical oral symptoms, signs and lesions in patients undergoing haemodialysis.

Materials And Methods:

This was a Cross sectional Study design performed after obtaining institutional ethics committee clearance and written informed consent , the patients fulfilling the inclusion and exclusion criteria , were taken up for the study. 80 patients with chronic kidney disease on haemodialysis for more than three months were included in this study after ruling out Chronic liver disease, malignancy and HIV. Detailed history was taken and non-invasive Oral examination of patients was conducted bedside for their convenience. Findings were recorded in a pre-formed proforma . Relevant Blood investigations were done. Data collected was entered, edited in Microsoft excel Spread sheet. Statistical Analysis was done in SPSS (Statistical Package for Social Sciences) version 20. [IBM SPASS statistics (IBMcorp. Armonk, NY, USA released 2011)] The descriptive statistics like mean, median, standard deviation and inter-quartile range were calculated. The frequency and percentages were displayed through frequency distribution tables. The association between numerical variables was checked through correlation while for categorical variables Chi square test was used. The level of significance was set at 5%. So significant value was considered if $p<0.5$.

Results:

The mean age of study subjects was 43.5 years ranging from 20-67 years and 45 (56.3%) were males and 35 (43.8%) were females. (Table 1 and 2)

Among other medical conditions 15 had diabetes, 24 had hypertension, 38 had combination of Diabetes and hypertension and 5 were tobacco chewers and 10 were Smokers and 2 were consuming both. (Table 2)

97.5% had oral complaints and 2.5% had no oral complaints. 68.8% had Xerostomia, 32.5% had Mucosal Pallor, 47.5% had Mucosal Pigmentation (Fig 2), 37.5% had Uremic Foetor, 37.5% had Coated Tongue, 15% had Thickened Mucosa, 5% had Angular Cheilitis, 2.5% had Candidiasis, 60% had Poor Oral Hygiene.(Table 3)

Discussion:

Oral lesions in our CKD patients were present in 78 of 80 patients, representing a prevalence of 97.5% consistent with studies from different parts of the world.[7] The reasons are many and include restricted diets, malnutrition due to GI congestion and decreased appetite, mouth neglect, immunosuppression, effects of medications and uremic toxins.[7]

In this Study we observed that in Patients who were on haemodialysis for longer time had more oral related health problems and was in accordance with study by Camacho-Alonso *et al*[8] which aimed to evaluate the oral health status, quality of life, anxiety and depression among haemodialysis patients and to analyse the effect of the duration of dialysis on these variables. They had concluded that all the parameters were worse in patients on haemodialysis, and oral health deteriorated as the duration on dialysis increased.

Mucosa pallor is due to anaemia mainly, which is caused due to multiple factors such as erythropoietin deficiency in ESRD, folic acid deficiencies, erythropoiesis inhibition, shortened erythrocyte life span, haemolysis and complications of haemodialysis etc.[9,10,11] Mucosal pallor in our study was seen in 32.5% patients while it was around 83% in the study conducted by Belazelkovska and

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colleagues in 2013, Patil et al found that in their study mucosal pallor was present in 87%patients which is double the findings observed in our study.[12][13]

CRF patients have higher levels of urea nitrogen in the blood and salivary production and is reported to have more severe halitosis particularly with the blood urea levels are >55 mg/dL[14]. In our study the ammonia like breath odour known as uremic fetor was found in 37.5% patients while it was around 56% in study done by Belazelkovska et al. Melakmakan et al reported that 31% of patients in their study had uremic fetor .[12][15] while Murali et al reported that 17% had uraemic fetor. Uday kumar et al obsereved that only 8% had uremic fetor in their patients.[16][17]

On examination we found that oral hygiene was poor in 60% patients. This was similar with the findings of Bhatsange et al, they had reported that in their study poor oral hygiene was seen in 63% patients on haemodialysis.[18] Parkar and colleagues found that poor oral hygiene was seen in 17.11% patients, 73.6% showed moderate oral hygeine[19] which was in contrast to our study .

Most prevalent oral lesion was found to be xerostomia in our study which had prevalence of 68.8%. Polyuria caused by the inability of the kidneys to reabsorb sodium is responsible for Xerostomia [20]. Patil et al reported that Xerostomia was seen in 91% of their patients which was slightly higher than our study.[13]While Belazelkovska et al from Romania reported that prevalence of xerostomia in 66.6% of their cases which was in concordance with our study.[12] Melakmakan et al found that 48.6% of their study patients had dry mouth which was slightly lower compared to our study.[15] Uday Kumar et al[17] and Murali et al in their study found much lower frequencies of dry mouth 31% and 23% respectively[16]

Our study had coated tongue in 37.5% patients. while Murali et al and Uday Kumar et al reported that only 11% of their patients in their study had coated tongue.[16][17] while 100% of CKD patients in the study of Belazelkovska et al had coated tongue.[17][12]

Mucosal pigmentation was found in 47.5% patients in our study. Murali et al reported mucosal pigmentation in 12 % patients in their study. [16] Angular cheilitis was found in 5% patients in our study. Belazelkovska et al found that angular cheilitis was present in 63% of the cases while Uday kumar et al reported that it was present in 12% patients.[12][17] Murali et al reported angular cheilitis in only 2% patients[16] which was concordant with our study.

In our Study among other medical conditions 18% had diabetes, 30% had hypertension, 47.5% had combination of Diabetes and hypertension and 3.7% had none of the other medical conditions. All patients were taking relevant medications according to their medical condition. These values were much higher than the values obtained by Gavaldá *et al*[21] which showed CRF in haemodialysis patients was due to diabetic nephropathy in 6.8%, vascular nephropathy in 10.2%, and primary glomerulonephritis in 10.2% of the subjects.

Our study has clearly showed that oral manifestation in renal patients are not strongly related to tobacco consumption and smoking as deleterious habits were not present in 79% of patients, 12.5% were smokers, 6.5% were tobacco chewers and 2% were consuming both.

Royne *et al*[22] carried out a cross sectional controlled study in a group of Swedish end –stage renal disease patients to see the prevalence and early detection of fungi infection. Oral lesions like erythematous oral stomatitis, membranous candidiasis or angular cheilitis, were found in 37.0% of the patients but in our study 5% patients had fungal disease like angular cheilitis and 2.5% had candidiasis. These manifestations are related to underlying malnutrition in CKD patients.

Socio Economic Status and Education also appeared to play an indirect role in the form Knowledge attitude and practice in our study 38.0% of them were uneducated, 48% had education till Grade 7, 12% had studied till high school, 2.0% had done till post-secondary level with majority of the patients belonging to the lower Socioeconomic status with poor knowledge attitude and practice towards their health care resulting in much delay in seeking health care worsening clinical outcome.

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Table 1: Distribution Of The Subjects Based On Age

Age		Groups		Total
		DM	Non-DM	
< 25 yrs	Count	0	10	10
	%	0.0%	21.3%	12.5%
> 55 yrs	Count	8	4	12
	%	24.2%	8.5%	15.0%
26 to 35 yrs	Count	0	14	14
	%	0.0%	29.8%	17.5%
36 to 45 yrs	Count	5	10	15
	%	15.2%	21.3%	18.8%
46 to 55 yrs	Count	20	9	29
	%	60.6%	19.1%	36.3%
Total	Count	33	47	80
	%	100.0%	100.0%	100.0%
Chi-square value-29.63				
p value-0.00*				

*significant

Table 2: Distribution Of The Subjects Based On Gender

Gender		Groups		Total
		DM	Non-DM	
Females	Count	13	22	35
	%	39.4%	46.8%	43.8%
Males	Count	20	25	45
	%	60.6%	53.2%	56.3%
Total	Count	33	47	80
	%	100.0%	100.0%	100.0%
Chi-square value- 0.43				
p value-0.51				

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Table 3: Distribution Of The Subjects Based On Oral Manifestations

Oral Manifestations			Groups		Total	Chi-square value	p value
			DM	Non-DM			
XEROSTOMIA	NO	Count	8	17	25	1.28	0.25
		%	24.2%	36.2%	31.3%		
	YES	Count	25	30	55		
		%	75.8%	63.8%	68.8%		
MUCOSAL PALLOR	NO	Count	18	36	54	4.29	0.038*
		%	54.5%	76.6%	67.5%		
	YES	Count	15	11	26		
		%	45.5%	23.4%	32.5%		
MUCOSAL PIGMENTATION	NO	Count	12	30	42	5.86	0.015*
		%	36.4%	63.8%	52.5%		
	YES	Count	21	17	38		
		%	63.6%	36.2%	47.5%		
URAEMIC FOETOR	NO	Count	17	33	50	2.89	0.089
		%	51.5%	70.2%	62.5%		
	YES	Count	16	14	30		
		%	48.5%	29.8%	37.5%		
COATED TONGUE	NO	Count	15	35	50	6.96	0.008*
		%	45.5%	74.5%	62.5%		
	YES	Count	18	12	30		
		%	54.5%	25.5%	37.5%		
THICKENED MUCOSA	NO	Count	25	43	68	3.76	0.052
		%	75.8%	91.5%	85.0%		
	YES	Count	8	4	12		
		%	24.2%	8.5%	15.0%		
ANGULAR CHEILITIS	NO	Count	32	44	76	0.45	0.49
		%	97.0%	93.6%	95.0%		
	YES	Count	1	3	4		
		%	3.0%	6.4%	5.0%		

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CANDIDIASIS	NO	Count	31	47	78	2.92	0.087
		%	93.9%	100.0%	97.5%		
	YES	Count	2	0	2		
		%	6.1%	0.0%	2.5%		
POOR ORAL HYGIENE	NO	Count	16	16	32	1.68	0.19
		%	48.5%	34.0%	40.0%		
	YES	Count	17	31	48		
		%	51.5%	66.0%	60.0%		

*significant

Conclusion:

These findings substantiates the need for comprehensive professional oral care as well as self-care instruction in CKD patients on dialysis as oral disease is a source of active infection in these medically compromised individuals and itself is responsible for additional morbidity and mortality. Therefore they should be routinely evaluated for Oral lesions and should be treated accordingly.

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