Manifestaciones orales en pacientes con enfermedad renal de un hospital de segundo nivel de atención de Acapulco, Guerrero
Artículo Original

Oral manifestations among patients with renal disease in a second level care hospital from Acapulco,
Guerrero

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RESUMEN

Introducción: Los pacientes con enfermedad renal muestran una amplia gama de semiología clínica. A nivel oral, las manifestaciones clínicas derivan por consecuencia de la enfermedad renal y el tratamiento destinado a ello. Objetivo: Describir las manifestaciones orales más frecuentes en pacientes con enfermedad renal de un hospital de segundo nivel de atención de Acapulco, Guerrero.

Material y métodos: Estudio transversal sobre una muestra por conveniencia de 58 pacientes, revisados durante mayo a julio del 2021. El expediente clínico electrónico obtuvo datos sociodemográficos, comorbilidades y caracterización de la enfermedad renal. En cuanto a los hallazgos clínicos de manifestaciones orales, se estratificó en alteraciones de tejidos blandos, tejidos duros y de glándulas salivales y del gusto. Se obtuvo un análisis univariado con el complemeto Real Statistics de Excel.

Resultados: Fueron reportados diversas manifestaciones orales de forma simultánea, siendo la xerostomía la más frecuente con el 79% (45/58), siguieron la caries y la palidez de mucosa con el 75% (43/58) y 46% (27/58), respectivamente.

Conclusión: Algunas manifestaciones encontradas fueron similares a las reportadas en otros estudios. El estudio servirá para seguir una línea de investigación del tema que en el futuro contribuya a encontrar factores asociados.

Palabras clave: Enfermedad renal, salud bucal, manifestaciones clínicas

SUMMARY

Introduction: Patients with renal disease show a wide range of clinical semiology. At the oral level, the clinical manifestations derive as a consequence of the renal disease and the treatment intended for it.

Objective: To describe the most frequent oral manifestations among patients with renal disease in a second level care hospital from Acapulco, Guerrero.

Material and methods: Cross-sectional study on a convenience sample of 58 patients, reviewed during May to July 2021. The electronic clinical record obtained sociodemographic data, comorbidities and characterization of renal disease. As for the clinical findings of oral manifestations, they were stratified into soft tissue, hard tissue and salivary gland and taste alterations. Univariate analysis was obtained with the Real Statistics Excel package.

Results: Several oral manifestations were reported simultaneously, being xerostomy the most frequent with 79% (45/58), followed by caries and mucosal pallor with 75% (43/58) and 46% (27/58), respectively.

Conclusion: Some manifestations found were similar to those reported in other studies. The study will serve to follow a line of research on the subject that in the future will contribute to find associated factors.

Key words: Renal disease, oral health, clinical manifestations

INTRODUCCIÓN

The Kidney Disease Improved Global Outcomes (KDIGO) defines chronic kidney disease as a decrease in glomerular filtration rate (GFR) below 60 ml/min. It is accompanied by structural or functional abnormalities present for more than three months, with health implications, and is classified into five stages according to GFR and albuminuria.[1]

Globally, in 2017, 1.2 million people died from chronic kidney disease (CKD). The global CKD mortality rate at all ages increased by 41% between 1990 and 2017, although there was no significant change in the age-standardized mortality rate. In 2017, there were 697.5 million cases of CKD at all stages, for a global prevalence of 9%.[2]

In Mexico, according to the 2012 National Nutrition Survey, the main causes of CKD are type 2 diabetes mellitus (T2DM) and arterial hypertension (AHT), which affect 6.4 million and 22.4 million adults, respectively.[3] Today, the decrease in mortality of patients with T2DM and AHT has allowed the evolution of different complications, such as CKD. Mexico has one of the highest prevalences of T2DM worldwide.[4] Some statistics on the population covered by the Mexican Social Security Institute (IMSS) indicate a prevalence of end-stage renal disease in adults of more than 1,000 per million covered. On the other hand, it was estimated that 129,000 patients had terminal CKD and that only about 60,000 were receiving treatment.[5]

Patients with end-stage renal disease are at risk for more severe oral disorders than the general population. Oral diseases associated with hard tissue, soft tissue and salivary gland disease lead to increased mortality.[6] Oral pathologies are associated with inflammation and malnutrition, which accelerate cardiovascular events in patients with end-stage renal disease.[7]

Patients with end-stage renal disease, especially those on hemodialysis, show a wide range of clinical signs and symptoms. At the oral level, studies have found clinical manifestations, a consequence of end-stage renal disease and the treatment intended for it. In Asia and the Middle East, India and Iran reported that hospital patients with chronic renal failure (CRF) had reduced salivary flow, which led to certain manifestations such as pallor, increased stone deposition, bleeding gums, metallic taste, hypoplasia of the teeth and fissured tongue.[8, 9]

In Europe, a hospital in Germany reported that most patients had clinically moderate to severe periodontitis.[10] In South America, Peru reports that caries, xerostomy and saburral tongue are the most common oral manifestations in eight out of ten CKD patients on hemodialysis treatment;[11] and in Ecuador they mention mucosal pallor and severe periodontitis.[12] A study in Mexico reported that dental pigmentation and dental erosion are the most common clinical signs in children with kidney disease, accompanied by poor oral hygiene.[13]

Oral lesions present in patients with renal disease, although they are not pathognomonic signs of renal disease, are extremely important to recognize. The dentist should identify these oral manifestations as part of renal failure, since an early presumptive diagnosis can be obtained only by differentiating them. A more comprehensive dentistry is needed, capable of treating patients without complications as well as patients with systemic diseases, both in their diagnosis, treatment and maintenance, in order to improve their quality of life.[14]

In our region, there are no studies that report the clinical situation in the oral cavity of patients with renal disease. Therefore, the objective of the research was to describe the most frequent oral manifestations in patients with renal disease at the Vicente Guerrero Regional General Hospital No. 1 in the city of Acapulco, Guerrero.

MATERIAL Y MÉTODOS

Descriptive cross-sectional study among patients with renal disease at the Vicente Guerrero Regional General Hospital No. 1 from Acapulco, Guerrero. The sample by convenience was 64 patients, of which two were excluded, one diagnosed with human immunodeficiency virus and another with renal transplant; and four were eliminated because they did not give informed consent. The total sample consisted of 58 patients of legal age with a diagnosis of acute or chronic renal failure reviewed during the period from May to July 2021.

The electronic clinical record served as the data collection instrument, where the patient's sociodemographic information (sex and age) was collected. Regarding the personal pathological history, the presence of comorbidities (diabetes and hypertension) was addressed. Regarding the nephrological history, the classification of renal disease (acute or chronic) was considered.

The dependent variable was the presence of any oral manifestation derived from the clinical observation given by the operator (sign) and from the patient's subjectivity (symptom). The clinical characteristics were broken down into three nominal categories, which were: soft tissue manifestations, hard tissue manifestations and salivary gland and taste alterations.

Some variables of interest, such as age, were divided into four age groups to facilitate data management. Regarding oral hard tissue manifestations, such as dental caries, the experience of the condition was taken into account based on the presence of at least one decayed, filled or lost dental organ due to the condition.

Data for the variables of interest were captured in Excel spreadsheets.[15] Univariate analysis obtained simple frequencies with the Real Statistics Excel add-in.[16] Results were presented in frequency tables with absolute and percentage figures.

The research protocol was approved by the coordination of the Medical Information and Clinical Archive Area of the hospital. The coordinator on duty allowed data collection, which was in accordance with the guidelines established by the Official Mexican Standard 004 of the Ministry of Health of 2012.[17] The clinical examination was noninvasive and did not put the health of the patients at risk. The confidentiality of the data was safeguarded, without disclosing the names of the patients involved. As a benefit, oral health education was provided to patients and their companions

RESULTADOS

Characteristics of the population

The 62% (36/58) of patients reviewed were female and the rest were male. Regarding age, the range ranged from 60 to 95 years with a mean of 75.98 (SD 2.8). As for the presence of comorbidities, the 45% (26/58) had T2DM and AHT simultaneously. Concerning the characterization of renal disease, the 64% (37/58) of patients present the chronic phase. Table 1 shows in detail the sociodemographic information and comorbidities of the patients.

Table 1. Sociodemographic characteristics and comorbidities among patients with renal disease at Vicente Guerrero Regional General Hospital No. 1.

Sociodemographics		n=58	%
Gender	Females	36	62%
	Males	22	38%
Age group	60-70 years	23	40%
	71-80 years	15	26%
	81-90 years	14	24%
	91 or more years	6	10%
Comorbidities			
Systemic disease	AHT	19	33%
	T2DM	13	22%
	T2DM and AHT	26	45%

Renal disease	Acute	21	36%
	Chronic	37	64%

Oral manifestations

Regarding soft tissue manifestations, mucosal pallor was the most frequent, identified in 46% (27/58) of patients (Figure 1).
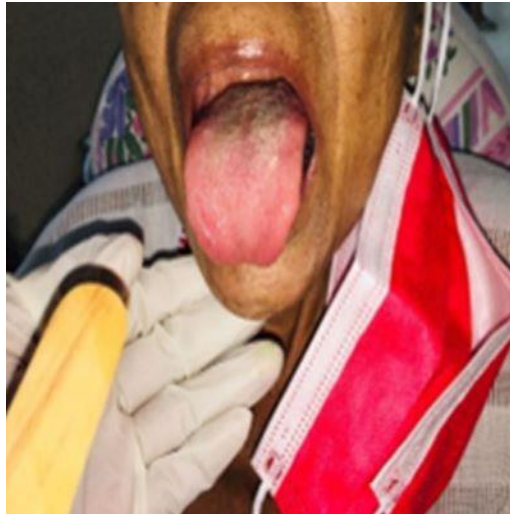

Figure 1. Mucosal pallor in a female patient with chronic kidney disease.

In terms of hard tissue manifestations, caries experience in at least one decayed, missing or filled tooth organ was recorded in 74% (43/58) of patients (Figure 2).

Figure 2. Absence of dental organs due to caries experience in a female patient with acute kidney disease; and with the presence of supragingival dental calculus.

On the manifestations of the salivary glands, the xerostomy was the most frequent in 78% (45/58) of patients (Figure 3).

Figure 3. Mouth dryness in soft tissues derived from xerostomy reported in a female patient with chronic kidney disease.

The xerostomy was the most frequent clinical manifestation with 77%, followed by caries and mucosal pallor with 74% and 46% of cases, respectively. Table 2 shows in detail the accounting of the recorded cases of the reported oral manifestations.

Table 2. Oral manifestations among patients with renal disease at Vicente Guerrero Regional General Hospital No. 1.

Soft tissues	Cases accounted	%
Mucosal pallor	27	46%
Gingivitis	18	31%
Petechiae and ecchymoses	6	10%
Gingival hyperplasia	3	5%
Uremic stomatitis	3	5%
Oral candidiasis	1	3%
Hard tissues		
Caries experience	43	74%
Dental calculus	15	26%
Salivary glands and taste alterations		

Xerostomy	45	77%
Halitosis	11	19%
Metallic taste	2	4%

* The table shows the absolute numbers based on the findings counted, taking into account that some oral manifestations were found simultaneously among patients.

DISCUSIÓN

CKD is defined as a functional or structural alteration of the kidney in which the irreversible loss of its function has occurred, requiring a substitution therapy known as dialysis.[18] It constitutes an important public health problem due to the high rate of disability or death caused by this disease.[19] Because of this systemic condition and the pathophysiological changes it involves, as well as the therapies applied, lesions can be found at the level of the oral mucosa.[20]

The purpose of the study was to generate information to learn about the different oral manifestations in patients in a second level care hospital. The main objective was to describe the clinical manifestations found in patients with renal disease. The study will serve to follow a line of research on the subject that in the future will contribute to find associated factors.

This study has multiple limitations that prevent extrapolation of the results. In the first instance, the design, being descriptive cross-sectional, makes it impossible to establish the temporality criterion. The results reported are simple frequencies from a univariate analysis. The information obtained only breaks down the most common manifestations jointly in the patients reviewed, without establishing causal associations.

In addition, it is likely that there was a misdiagnosis of the oral manifestations, as it is difficult to establish an accurate opinion of the condition because the reviewer did not have the endorsement of oral pathology. It will be important to perform similar studies under interexaminer refinement based on calibration by oral pathologists, and to reduce the observation bias. Another piece of information was about the 2019 coronavirus disease situation, which prevented having optimal hospital conditions for a thorough review of each patient. The lack of adequate lighting and equipment in a cubicle could also influence diagnostic overestimation errors.

We also note that certain oral manifestations were reported by the patient's subjectivity, such as xerostomy, which leads to possible random errors that conditioned an underestimation or overestimation of the event. It is important to point out that salivary secretion is not the same throughout the day, therefore, in future research, we recommend auxiliary diagnostic means such as sialometry, which allows differentiating between unstimulated saliva and stimulated saliva. Likewise, we recommend that, in future studies,

the subject matter focused on only one oral condition be specified, involving associated factors that were not included in this research.

We found joint oral manifestations in the patients, the most prevalent being xerostomy with 79%, caries with 75% and mucosal pallor with 46%. The xerostomy was more prevalent among women, in the 60-70 years age group with a diagnosis of hypertension and CKD.

Caries was also more common among women aged 60 to 70 years, with simultaneous comorbidity of diabetes and hypertension in the CKD phase. As for mucosal pallor, it affected women aged 81 to 90 years with simultaneous comorbidity and CKD.

It is probable that the presence of dental caries in patients with CKD is codirectional to low or no salivary flow. Beela *et al*., document that almost half of prehemodialysis patients have a reduced salivary flow of 0.1-0.4 ml/min. They also found that mucosal pallor, increased dental calculus, gingival bleeding, metallic taste, tooth hypoplasia and fissured tongue are common manifestations in CKD patients, although no significant association was found.[8] Honarmand *et al*., documented that urea level and pH were higher in Iranian hemodialysis patients compared to a control group, with halitosis, xerostomy and increased calculus being the most frequent manifestations.[9]

Schmalz *et al*., mention that patients with renal insufficiency have poor oral hygiene. They also suggest that transplant candidates have significantly more gingival overgrowth. Among the findings they report, moderate and severe periodontitis are the most prevalent in these patients.[10]

In our study, oral hygiene was not addressed, but about two out of ten patients suffered gingivitis, being higher among men aged 60 to 70 years, with T2DM and AHT with acute renal disease. It is possible that sociocultural determinants are linked to the presence of poor oral hygiene, such as socioeconomic level and level of schooling. Perhaps these variables that were not included are codirectional to caries and gingival disease present in the patients.

Lecca-Rojas *et al*., found that saburral tongue, gingival enlargement and gingival bleeding were the most frequent oral manifestations with 88%, 63% and 55%, respectively.[11] In our study, only 27% of the patients manifested gingival hyperplasia. It is likely that some of the clinical manifestations are a consequence of the treatment applied, where soft tissues, hard tissues and salivary glands are affected. Vizuete-Bolaños *et al*., mention that mucosal pallor, severe periodontitis and multiple loss of teeth together with a high rate of accumulation of dentobacterial plaque are frequent in Ecuadorian patients with renal disease.[12]

In a national study, Castillo *et al*., found that dental pigmentation and dental erosion are frequent conditions in children with CKD, with poor oral hygiene and low rates of decayed, missing and filled teeth.[13] These results are not comparable to ours, due to the study

population; however, they show that the oral manifestations of renal disease occur at different ages. Recalling that, in our study, a large number of patients had caries experience, however, there were a large number of them who no longer had dental organs, therefore, it was difficult to establish an epidemiological index in the population.

The complexity in the care of patients with kidney disease indicates the need to create awareness about the management of this pathology and the relevance of continuous communication and collaboration among health professionals. Blue *et al*., conducted a study in which they implemented oral health and CKD educational seminars for nephrology nurses by calibrated dental hygiene educators. The results showed that the nurses had little knowledge of oral health and its relationship to CKD, but following the educational intervention by the oral hygienists, a significant increase in knowledge was observed.[21]

The present study provides a window of help for multidisciplinary collaboration at the hospital level. It is necessary to educate patients with renal disease to maintain proper oral health. Every patient who will undergo hemodialysis therapy or kidney transplantation is prepared prior to their intervention, the mouth being the first step to counteract present infections. It is essential that the team of nephrologists work in synergy with the dental professional in order to identify oral lesions to give a specific treatment with an adequate approach.

Taking into account that the present study was carried out in a public hospital setting, the results of this study could not be generalized to other different populations. Nevertheless, this work constitutes a platform for the generation of projects that address oral health issues and their systemic relationship. In future studies, the sample size should be expanded to include health facilities with dialysis centers in order to cover greater population variability.

The study sample selected by convenience reflects a part of the population of patients aged 60 to 95 years with renal disease and who are beneficiaries of a public hospital. The private hospital institutions have different infrastructure, logistics and population than the public ones, therefore, the results are not comparable. However, the results could be compared with patients from other public sector hospitals with similar characteristics in the region.

Conclusion

Multiple joint oral manifestations were found in patients with renal disease, the most prevalent being xerostomy, caries and mucosal pallor. Some manifestations found were similar to those reported in other studies. The study will serve to follow a line of research on the subject that in the future will contribute to find associated factors.

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