Review Article

JRAD Journal of Research and Advancement in Dentistry

J Res Adv Dent 2018;9:1:66-69.

Oral Manifestations and Dental Management Strategies in Maintenance Haemodialysis Patients

Kinnari Rajpura[1*] Grishma Doria[2] Haresh Patel[3]

[1]Reader, Department of Oral Pathology, AMC Dental College and Hospital, Ahmedabad, Gujarat, India.
[2]Reader, Department of Oral Pathology, Faculty of Dental Science, DDU, Nadiad, India.
[3]MD, DM, Consultant Nephrologist, Apollo Hospitals, Ahmedabad, India.

ABSTRACT

Background: Chronic renal Failure (CRF) is the progressive and irreversible deterioration of renal function. Patients with CRF requiring maintenance haemodialysis (HD) exhibit increased prevalence of oral lesions. Since worldwide increasing number of patients with this disease have been documented and majority of them show oral signs and symptoms related to disease or treatment, dental management of such patients require clinician to be aware of oral manifestations related to disease and understand patients' special condition such as bleeding tendency, hypertension, anaemia, drug intolerance, altered bone mineralization and increased susceptibility to infection. The purpose of this article is to aware dental practitioners regarding oral manifestations of CRF patients on maintenance haemodialysis and to summarize management strategies that can be put in to practice in dental office to treat these patients.

Keywords: Hemodialysis, xerostomia, oral manifestations.

INTRODUCTION

Chronic renal failure (CRF) is a progressive and irreversible decline in renal function that causes metabolic derangements, bone disease, chronic inflammation, accelerated atherosclerosis and cardio vascular disease(1).Various causes for CRF include hypertension, diabetes, glomerular nephritis, interstitial nephritis, pyelonephritis etc. Worldwide prevalence and incidence of patients with CRF appears to be increasing and alteration in bone metabolism and in immune status can be significant to the dental practitioner as these patients have related oral lesions(1,2).

Maintenance hemodialysis or kidney transplantation are alternatives for the removal of metabolic waste products in CRF patients.(3)Patients on maintenance hemodialysis can be considered as a potential candidate for transplant. But due to lack of awareness about organ donation makes availability of transplant unpredictable. In India ,there are around 130,000 patients are on maintenance and the number is increasing by about 232 per million population.(4)From this view point to study oral lesions among these patients and to find possible link between different subjective symptoms and objective clinical findings becomes interesting for oral health practitioners.

Oral Manifestations

Oral cavity exhibits manifestations of underlying systemic illness and serve as indicator of overall health. Up to 90% of patients with CRF show oral signs and symptoms in soft and hard tissues, some of them being a cause of disease itself and others deriving from the treatment of pathology.(5) The oral manifestations observed in CRF and maintenance hemodialysis patients are mainly unpleasant taste, burning sensation, xerostomia, dry fissured lips, uremic fetor, enamel hypoplasia, renal osteo dystrophy, coated tongue, pale mucosa, atrophic tongue and petechie etc.(3)

Received: May. 4, 2018**: Accepted**: July. 18, 2018
***Correspondence Dr. Kinnari Rajpura.**
Department of Oral Pathology, AMC Dental College and Hospital, Ahmedabad, Gujarat, India.
Email: Not Disclosed

pISSN 2278-0076
eISSN 2321-9270

Unpleasant taste

Metallic taste in uremic patients has been reported due to urea content in the saliva and its subsequent breakdown in ammonia and carbon dioxide by bacterial urease(2,6).It may be one of the many factors associated with poor nutritional status of many patients(3).

Xerostomia

Xerostomia or dry mouth is common complaint among patients on maintenance hemodialysis.(7,8)There are several reasons of xerostomia among these patients. They are mainly, a decrease in salivary secretion or as a consequence of liquid in take restrictions, secondary effects of medications (mainly anti hypertensives),possible atrophy of minor salivary gland parenchyma by uremic involvement and mouth breathing. Increased phosphate concentrations and changes in pH of saliva can be additional possible causes of xerostomia.(3,8)

Uremic fetor

The diminished function of kidneys results in an increase in the levels of urea in the blood and also in saliva, where it will turn in to ammonia by action of urease – splitting oral organism. Due to this reason, uremic individuals have characteristic halitosis known as uremic fetor.(9,3)Xerostomia can be considered as an additional factor for the characteristic halitosis.

Coated tongue

Coated tongue is caused by retention of desquamated epithelial cells and dead leukocytes on filliform papilla and by volatile sulfurous compounds produced by anerobic bacteria on tongue surfaces. Other factors like poor oral hygiene, low salivary flow, restricted fluid intake and even emotional condition of dialysis patients have an impact on its occurance.(6,11)

Oral candidiasis and angular cheilitis

In hemodialysis patients, compromised immune system due to uremia, malnutrition and dysfunction of cellular and humoral immunity increase the risk for opportunistic candidal infection. However, candidiasis may occur secondary to xerostomia and systemic disease like diabetes. Candidal infection may present as angular cheilitis, pseudomembranous or erythematous ulceration or chronic atrophic infection.(3,6,12)

Mucosal petechiae and other lesions

It is well established that hemodialysis predispose to petechiae, ecchymosis and hemorrhage in the oral cavity due to alteration in platelet aggregation and due to dialysis that diminish platelet recount due to mechanical damage and heparin anticoagulation during HD process.(13)white patches of the skin are called as “uremic frost” seen in patients with CRF due to deposition of urea crystals on the epithelial surfaces due to perspiration. similar deposition can be seen intraorally due to saliva evaporation(5).Mucosal palor is most frequently found in HD patients. The pale appearance of oral mucosa is due to anemia caused by erythropoietin and folic acid deficiencies.

Gingival and periodontal disease

Calcium channel blockers and other medicines used in the treatment of CRF can lead to gingival hyperplasia. Gingival overgrowth is usually confined to attached gingival but may extend coronally and interfere with occlusion, mastication and speech. gingival bleeding may result from platelet dysfunction and due to effect of anti coagulant in CRF patients.(2,12,14)Periodontal problems such as attachment loss, recession and deep pockets can be seen as a result of depression, suppressed immunity, use of anticoagulants and increased salivary urea with consequent change in oral micro flora.

Uremic stomatitis

Uremic stomatis is oral complication of end stage renal disease.it is seen due to elevated levels of urea and other nitrogenous waste in blood of CRF patients(3).Clinically it is characterized by the presence of erythematous lesions which are localized or generalized, covered by pseudomembranous exudates that can be removed leaving intact or ulcerated area.(15)

Enamel hypoplasia

Enamel hypoplasia or delayed eruption of teeth is seen in children with end stage renal disease and

maintenance hemodialysis, due to alteration in calcium and phosphate metabolism. etc(16)

Renal Osteodystrophy

In CRF renal osteodystrophy can occur due to alteration in calcium and phosphorus metabolism, abnormal metabolism of vitamin D and compensatory hyperactivity of parathyroid glands.it is characterized by bone demineralization, decreased trabeculation, decreased thickness of cortical bone, ground glass appearance of bone, metastatic soft tissue calcification, radiolucent fibrocystic lesions, radiolucent giant lesions, lytic areas of bone, jaw fracture(spontaneous or after dental procedure),abnormal bone healing after extraction, and, sometimes, dental mobility as a consequence of loss of substance in the bone.(10,17)

Dental management of patients on maintenance hemodialysis

The dental management problems in CRF patients are mainly: bleeding tendencies, infections, hypertension, renal osteodystrophy, disturbance in metabolism and removal of drugs and vascular access.(10)

While treating patients on HD, dental practitioner should take accurate medical history. Good communication with their Nephrologist is also highly recommended in order to be aware of the stage of the pathology suffered and the treatment prescribed. Patient should be advised for hemostatic study(platelet count, bleeding time, hematocrite) before going for any dental procedure. Dentist should perform dental procedure on the day not receiving dialysis to make sure no heparin in the blood. Monitoring of blood pressure pre and post operatively mandatory and avoid compression of arm with the vascular access for HD(10).Some drugs must be avoided due to renal insufficiency and some drugs require dosage and frequency adjustment. Bones are more vulnerable to fractures due to renal osteodystrophy due to secondary hyperparathyroidism so extra care must be taken while performing dental extraction.

CONCLUSION

It is generally accepted that patients with CRF undergoing hemodialysis exhibit an increased prevalence of oral lesions which could be related to the medical ,psychological and socio economic characteristics of these patients.Proper oral examination and identification of oral manifestations related to the disease is invaluable to diagnose disease at early stage.The hematological changes,bone metabolism changes and alteration in immune status can complicate oral condition of these patients but with the use of proper treatment protocol,the dental management of these patients become effective and safe.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

REFERENCES

1. Reis et al.Oral manifestations in chronic kidney failure patients.Journal of Den Sci,2016,31(1):21-24.

2. Proctor R et al.Oral and dental aspects of chronic renal failure.J Dent Res.2005,84,199-208.

3. Ahmed KM et al.Oral and Dental findings in patients with End stage Renal Disease Undergoing Maintenance Hemodialysis in Sulaimani City.J Interdiscipl Med Dent Sci .2015,3:3.

4. Varughese S et al.Chronic Kidney Disease in India.A clarion call for change.Clinical journal of American society of Nephrology.2018,13(5),802-804.

5. De Rossi SS et al.Dental considerations for the patient with renal disease receiving hemodialysis.j Am Dent Assic,1996,127:211-9.

6. De la Rossa Gracia E,oral mucosa symptoms,signs and lesions,in end stage renal disease and in non end stage renal disease diabetic patients.Med Oral Pathol Oral Cir bucal.2006,11:467-473.

7. Shaun A et al.Renal disease and the mouth.Am J Med,2007,120:568-575.

8. Shilpa Kuravatti et al.Oral manifestations of chronic kidney disease- an overview.International journal of contemporary

medical research. 2016,vol 3,issue 4,1149-1152.

9. Kho HS et al.Oral manifestations and salivary flow rate,pH, and buffer capacity in patients with end-stage renal disease undergoing hemodialysis.Oral Surg Oral Med oral Pathol oral Radiol Endod ,1999,88:316-319.

10. Silvia Marti Alamo et al.Dental considerations for the patient with renal disease.J clin Exp Dent. 2011,3(2):e112-9.

11. Belazelkovska A et al.Oral changes in patients with chronic renal failure.Romanian J of Oral Rehabilitation.2013,5:104-112.

12. Klassen JT et al.The dental health status of dialysis patients.J Canadian Dental Association.2002,68:34-38.

13. Chuang SF et al. Oral manifestations in diabetic and non diabetic uremic patients receiving hemodialysis. Oral Surg Oral Med oral Pathol oral Radiol Endod 2005,99:689-695.

14. Alamo SM et al. Dental consideration for the patients with renal disease. J Clin Exp Dent 3:e112-e119.

15. Neville BW, Damm DD, Allen CM, Oral manifestations of systemic disease. In: Bouquot JE (Ed).oral and maxillofacial pathology.(2nd ED).USA:WB Saunders Company 2002:705-736.

16. Davidovich E et al. Pathophysiology, therapy and oral implications of renal failure in children and adolescents:an update. pediatric dent.2005,27:98-106.

17. Kalyvas D et al. Localized jaw enlargement in renal osteodystrophy:Report of a case and review of literature. Oral Surg Oral Med oral Pathol oral Radiol Endod 2004:97:68-74.