ISSN- O: 2458 - 868X, ISSN–P: 2458 – 8687
Index Copernicus Value: 68 . 16
PubMed - National Library of Medicine - ID: 101731606

International Journal of Medical Science and Innovative Research (IJMSIR)
IJMSIR : A Medical Publication Hub
Available Online at: www.ijmsir.com
Volume – 5, Issue –3, June - 2020, Page No. : 425 - 429

To study the mucocutaneous manifestations in patients with CKD

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Citation this Article: Dr. Manish Kumar Meena, Dr. Deepika Meena, "To study the mucocutaneous manifestations in patients with CKD **"**, IJMSIR- June - 2020, Vol – 5, Issue -3, P. No. 425 – 429.

Type of Publication: Original Research Article

Conflicts of Interest: Nil

Abstract

Background: The chronic kidney disease (CKD) is defined as the presence of kidney damage or decreased level of kidney function for three months or more, irrespective of etiology.

Methods: This study was undertaken to study the variety of mucocutaneous manifestations in chronic renal disease cases. 100 patients of CKD, were examined for skin changes.

Results: The mean age was 49.23 ± 12.65 yrs (range 18-80). Maximum number of patients in the study belonged to age group of 51-60 years. This study included 58 males and 42 females with male to female ratio of 1.38:1.Most common etiology causing CKD was hypertension, followed by diabetes mellitus. Xerosis (66.00%)was the most common manifestation followed by purtusis (29.00%).

Conclusion: Early recognition of these skin manifestations and prompt initiation of treatment can dramatically alter their course and even detect underlying renal disease.

Keywords: Renal Disease, Skin Manifestations, Hyperpigmentation

Introduction

The prevalence of mucocutaneous manifestations is high among dialysis patients. This occurs because of numerous factors such as uremia, metabolic disorders, dialysis and side-effects of immunosuppressive drugs. Patients on hemodialysis (HD) are known to develop cutaneous manifestations ranging from infections to malignancies. Broadly, in all patients with advanced renal insufficiency, at least one cutaneous manifestation has been observed, and the most common lesion is skin discoloration. In addition, new cutaneous lesions may develop with increasing age. Sometimes, cutaneous changes maybe the first important sign in patients with chronic renal failure.[1]

The effects of chronic kidney disease are complex as it causes dysfunction of multiple organs [2]. Skin often acts as a diagnostic window in CKD by presenting myriad manifestations.

With increasing prevalence of CKD and newer advances in medicine leading to its better management in the form of hemodialysis, peritoneal dialysis and renal transplantation and consequential better quality of life and life expectancy, the diversity of dermatological manifestations is also broadening.

CKD presents in various forms in skin, nails, mucosa and hairs due to complex interplay of etiological factors, comorbidities, investigative and management modalities.

These manifestations can be either non-specific or specific to CKD. Non -specific disorders include pigmentary disorders, pruritus, xerosis, acquired ichthyosis, and half-and- half nail. Specific disorders include acquired perforating dermatosis, calciphylaxis, bullous dermatoses, and nephrogenic systemic fibrosis.

Materials and Methods

It was a non-interventional point source observational study.

Sample Size was 100 consecutive patients of CKD

Case Definition: Diagnosis and staging of CKD was based on clinical examination by an experienced nephrologist. In case of doubt, the diagnosis was confirmed by relevant laboratory, radiological investigations and renal biopsy. The definition of CKD was based on persistent decline in renal function lasting for at least three months. The various dermatological manifestations were observed by investigator and confirmed by two experienced dermatologists under adequate natural light. Various dermatological manifestations were recorded in a predesigned pro-forma and photographic documentation was done at the same sitting.

Inclusion Criteria were Patients of both sexes with CKD aged >18 years and Duration of chronic kidney disease >3 months

Exclusion Criteria were Age < 18 years, Patients on peritoneal dialysis, Post renal transplantation patients, Patients of acute renal failure and Patients of known immunosuppression

Data collection

Demographic profile of the patient including name, age ,sex ,residential address and disease characteristics like primary disease causing CKD , duration of CKD, stage of CKD ,personal/family history of structural kidney defects and duration of hemodialysis with duration were included .

Various non-infective and infective manifestations involving skin, nails, hairs, oral mucosa were documented separately .

Data Analysis

To collect required information from eligible patients a pre-structured pre-tested Proforma will be used. For data analysis Microsoft excel and statistical software SPSS will be used and data will be analyzed with the help of frequencies, figures, proportions, measures of central tendency, appropriate statistical test

Results

The mean age was 49.23 ± 12.65 yrs (range 18-80). Maximum number of patients in the study belonged to age group of 51-60 years. This study included 58 males and 42 females with male to female ratio of 1.38:1.

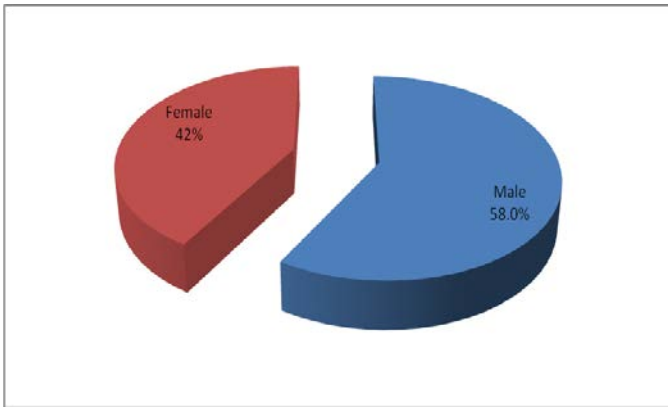

Fig. 1: .sex wise distribution of CKD patients.

Table 1: Distribution of the cases according to etiology

Primary Etiology	Number of patients	percentage
Hypertension	44	44
Diabetes mellitus	23	23
Obstructive uropathy	8	8
Chronic interstitial nephritis	1	1
Nephrotic Syndrome	2	2
Polycystic Kidney Disease	4	4
Analgesic abuse	2	2
Hepatorenal syndrome	1	1
Nephritic syndrome	1	1
Cardio renal syndrome	1	1
Diabetesmellitus+hypertension	1	1
Unknown	12	12
Total	100	100.00

Most common etiology causing CKD was hypertension, followed by diabetes mellitus. The uncommon etiological diseases were cardiorenal syndrome, hepatorenalrenal syndrome, lupus nephritis, nephritic syndrome, plasmodium falciparum malaria, PIH, renal tuberculosis.The cause was unknown in 12 patients.

Table 2: Distribution of the cases according to stage

Stage	No of cases	Percentage
1	0	0
2	1	1
3	1	1
4	5	5
5	93	93
Total	100	100

Most of the patients had severe chronic kidney disease.

Table 4: Distribution of cases on the basis of skin manifestations

Skin manifestations	No of cases	Percentage
Xerosis	66	66.00
Pruritus	29	29.00
Pallor	19	19.00
Hyperpigmentation	27	27.00
Pupura	12	12.00
Pseudopophyria	3	3.00
Acquired perforating disorder	2	2.00
Drug rash	2	2.00
Yellow pigmentation	8	8.00
PPKD	2	2.00
Finger papules	1	1.00
Necrobiosis lipoidica	2	2.00
Eczema	3	3.00
Exfolative dermatitis	1	1.00
Melasma	1	1.00
Senile comedons	3	3.00
Seborrheic keratosis	5	5.00
IGH	7	7.00

Xerosis (66.00%)was the most common manifestation followed by purtusis (29.00%).

Discussion

Chronic kidney disease (CKD) is a progressive loss of kidney function over a period of months or years through five stages. The number of patients with endstage renal disease (ESRD) in India is increasing. Dermatologic abnormalities are common in chronic kidney disease (CKD) and range from the nearly universal xerosis and pruritus to uncommon conditions such as hyperpigmentation of exposed areas, purpuric

skin changes, acquired perforating dermatosis, and nail abnormalities[3]. In a study by Szepietowski JC et al . all patients with CKD had one or more skin manifestations.[4]

Hypertension and Diabetes mellitus have been seen to be responsible for more than 50% of new cases of ESRD. Cystic/hereditary kidney diseases were the next most common causes. The remaining causes of ESRD included vasculitis, infectious or rheumatologic disease, interstitial nephritis, tumors, cholesterol emboli, and systemic amyloidosis. Infectious causes of glomerulonephritis included streptococcal infections, human immunodeficiency virus (HIV), and hepatitis viruses, both hepatitis C (HCV) and hepatitis B (HBV). Thomas E et al et al was also reported that Hypertension and Diabetes mellitus to be responsible for CKD.[5]

Xerosis was the most common cutaneous abnormality (66.00%), which is comparable with other studies.[6,7] A reduction in the size and functional abnormality of eccrine sweat glands, causing epithelial dehydration may contribute to the development of xerosis. Clinical and histologic evaluations have shown an overall decrease in sweat volume in patients with uremia, as well as atrophy of sebaceous glands. Some patients may develop acquired ichthyosis. Dry, lusterless hair and sparse body hair could also be attributed to the decreased sebaceous activity.

Diffuse hyperpigmentation accentuated in sunexposed areas, seen in many patients is characteristic of uraemic patients. Thomas E et al[5] reported that pigmentary alterations occurred in 28.0% of dialysis patients and increases over the duration of renal disease. An increase in melanin in the basal layer of the epidermis due to an increase in poorly dialyzable betamelanocyte stimulating hormone can explain the pigmentation on sunexposed areas. [6] The intensity of melanin pigmentation increases with respect to the duration of endstage renal disease.

A yellowish tinge of the skin was reported in 35% of patients by Szepietowski JC et al.,[4] but we encountered yellowish discoloration in only 17 (8.5%) patients, probably because of the dark complexion of Indians, which masks this finding. This has been explained by retained lipid soluble pigments such as lipochromes and carotenoids, deposited in the dermis and subcutaneous tissue.

Pruritus is one of the most characteristic and troublesome symptoms of CKD. Generalised pruritus was recorded in 28.50% of patients in our study. It has been reported to be the second most common skin symptom in CRF, with a prevalence of 20% to 48% in renal disease in various studies.[8,9]

There are a number of proposed etiologies for pruritus in CKD including changes related to xerosis, uremia, calcium and phosphate dysregulation, mast cell proliferation with a concomitant increase in histamine levels, hormonal derangement and hypovitaminosis D. Parathyroid hormone and divalent ions (eg, calcium phosphate and magnesium ions) have been implicated, as is seen with severe secondary hyperparathyroidism but these findings lack consistent correlation.[9]

Conclusion

Recent advances in the treatment have improved the quality of life and life expectancy of these patients, resulting in changes in the frequency and types of disorders observed in CKD. Some prophylactic measures can prevent some of the cutaneous manifestations, such as emollients for xerosis and pruritus, sun screens, avoidance of sun exposure and adequate clothing for pigmentary changes, and cutaneous malignancies.

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