ORIGINAL RESEARCH PAPER

Nephrology

CLINICAL PROFILE OF CHRONIC KIDNEY DISEASE IN A TERTIARY CARE CENTRE

KEY WORDS: chronic kidney disease, ESRD, hemodialysis, anemia.

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ABSTRACT

Background and objectives: Chronic kidney disease (CKD) is an important challenge for health systems around the world, consuming a huge proportion of health care finances. It is even more significant for developing countries which now face the double burden of infectious diseases and growing problems of non-communicable diseases such as obesity, diabetes and hypertension. For many years the magnitude of ESRD in India has not been studied. The use of dialysis in the country as a treatment strategy for ESRD dates less than a decade. In addition, access for dialysis is limited and is a highly unaffordable for the general public. The objective of this study was to study clinical profile of patients of Chronic Renal Disease who are undergoing hemodialysis at MGM Hospital Navi Mumbai.

Methodology: The study was a cross sectional study carried out on 50 patients of chronic kidney disease undergoing hemodialysis at our center as per the pre specified inclusion and exclusion criteria. The data was collected by using questionnaire that consists of characteristics related to demographic profiles, causes and risk factors of renal disease, clinical conditions of patients at initiation and last session of dialysis and treatments given. The outcome of all patients in terms of survival and mortality was assessed at the end of the study.

Results: In our study, Hypertensive nephropathy was seen as predominant etiology in 56% patients followed by diabetic nephropathy in 16% patients, obstructive uropathy in 14% and with unknown causes in 14% patients respectively. Maximum patients had B/L pedal edema 56% as their clinical finding while pallor was seen in 44% of study population. 16% patients had both pedal edema and pallor. Mean hemoglobin of the patients was 7.936 mg/dl in alive and 6.8 mg/dl in dead patients respectively. Mean serum creatinine of patients was 9.756mg/dl in alive and 5.770 mg/dl in dead patients.

Conclusion: These findings enable the early identification of patients at risk, enabling improvements and adjustment in the care of patients on hemodialysis and therefore improvement in survival of such patients. Patients diagnosed earlier with CKD and started on planned dialysis tend to have lower mortality rates.

INTRODUCTION

Chronic kidney disease (CKD) is an important challenge for health systems around the world, consuming a huge proportion of health care finances. It is even more significant for developing countries which now face the double burden of infectious diseases and growing problems of non-communicable diseases such as obesity, diabetes and hypertension. About 85% of the world populations live in less developed part of the world where CKD prevention programs are either rudimentary or virtually nonexistent. Morbidities and mortalities emanating from CKD in these countries are immense and related to limited access for treatment options.

Renal replacement therapy (RRT) is the mainstay of care for patients with end stage renal disease (ESRD). Dialysis as an option of RRT prolongs survival, reduces morbidities and improves quality of life. However, despite many technical advances, morbidities and mortalities of patients on dialysis remain unacceptably high and their quality of life is often poor. Common independent predictors of survival are age, race, serum albumin at the start of dialysis, activity level at the start of dialysis, and presence of certain comorbidities such as heart failure and cancer.

For many years the magnitude of ESRD in India has not been studied. The use of dialysis in the country as a treatment strategy for ESRD dates less than a decade. In addition, access for dialysis is limited and is a highly unaffordable for the general public.

The gold standard of dialysis therapy is yet to be identified. Newer approaches are required to improve overall mortality rates and to achieve an acceptable level of survival and rehabilitation in hemodialysis patients (1). Therefore we attempted this study in order to evaluate the clinical profile of chronic kidney disease patients on maintenance hemodialysis for end stage renal disease and assess factors related to poor outcomes.
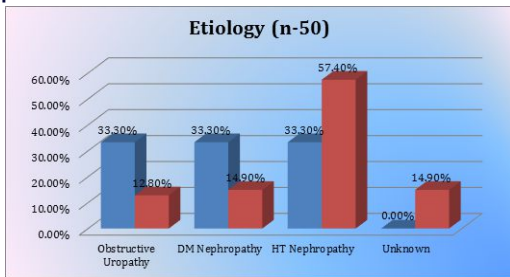
MATERIALS AND METHODS

This prospective study was carried out for chronic kidney Disease at Hemodialysis Unit, MGM Medical College Hospital, Kamothe, Navi Mumbai, India. **Inclusion Criteria:** All adult patients (18 years and older) who were on maintenance hemodialysis for chronic renal failure during the specified period of 2 years were included in this study. **Exclusion Criteria:** 1. Patients who were started on hemodialysis for 'or' more than 2years. 2. Incomplete medical records. 3. Patients with acute renal failure requiring temporary dialysis. **Methodology:** The data was collected by using questionnaire that consists of characteristics related to demographic profiles, causes and risk factors of renal disease, clinical conditions of patients at initiation and last session of dialysis and treatments given. Data was collected by reviewing patient's medical records and dialysis registration book.
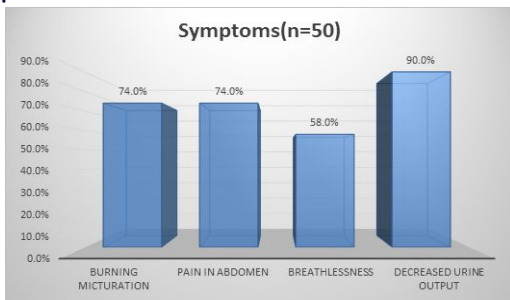
RESULTS

Total 50 patients were included in study. Maximum patients were in age group of 41-50 years with mean age of 41.33. Out of the 50 patients, 34% were females and 66% were males. Hypertensive nephropathy was seen as a predominant etiology in our study population in 56% individuals, followed by Diabetic nephropathy and obstructive uropathy in 16% and 14% respectively and with unknown causes in 14% patients (graph no. 1 etiology). 90% patients had decreased urine output as their chief complaint, while burning micturition and pain in abdomen was observed in 74% patients. 58% had breathlessness as their chief complaint (graph no. 2 symptoms). 56% had hypertension as their major co-morbidity. Diabetes Mellitus was present in 16% patients, whereas only 4% patients had ischemic heart disease as co-morbidity (graph no. 3 comorbidities). In our study 14% individuals were alcoholic and 18% were smokers. The remaining patients 68% did not have history of alcohol or smoking. Maximum patients had B/L pedal edema (56%) as their clinical finding while pallor was seen in 44% of study population. 16% patients had both pedal edema and pallor (graph no. 4 general

examination). In the study population, the mean systolic blood pressure was 156mmHg and diastolic blood pressure was 97.24 mmHg. USG findings in our study were Small sized kidneys with increased echotexture seen in 80% individuals while 20% patients had small sized kidneys with normal echotexture. Mean hemoglobin of the patients was 7.936 mg/dl in alive and 6.8 mg/dl in dead patients respectively. Mean serum creatinine of patients was 5.770 mg/dl in alive and 9.756mg/dl in dead patients. Mean urea of patients was 101.40mg/dl in alive and 75.33mg/dl in dead patients respectively. All patients were on hemodialysis out of which 8.5% patients were on once weekly hemodialysis, 64% were on twice weekly hemodialysis and 28% were on thrice weekly dialysis. The comparison between frequency of HD and mortality is shown in (graph no. 5 HD frequency). AV fistula was constructed in 2 patients of Once weekly, 18 patients of twice weekly, 9 patients of thrice weekly Hemodialysis respectively, Dialysis catheter was present in 1 patient of Once weekly, 12 patients of twice weekly, 3 patients of thrice weekly Hemodialysis respectively whereas Permanent catheterization was present in 1 patient of Once weekly, 02 patients of twice weekly, 02 patients of thrice weekly Hemodialysis respectively (graph no. 6 HD characteristics).
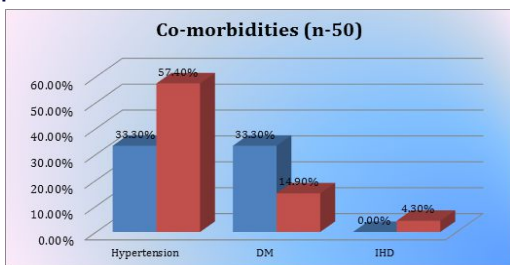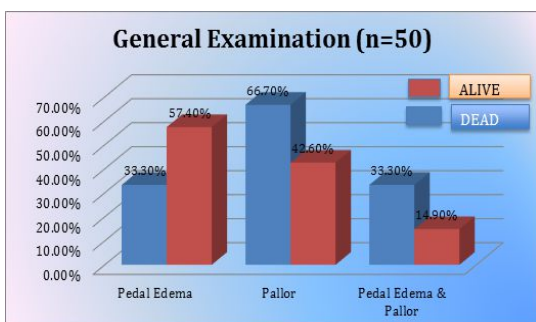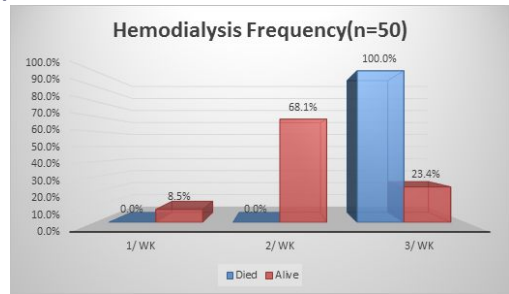
Graph No. 1

Etiology (n-50)

Graph No. 2

Symptoms(n=50)

Graph No. 3

Co-morbidities (n-50)

Graph No. 4

General Examination (n=50)

Graph No. 5

Hemodialysis Frequency(n=50)

Graph No. 6

HD Characteristics and Frequency(n=50)

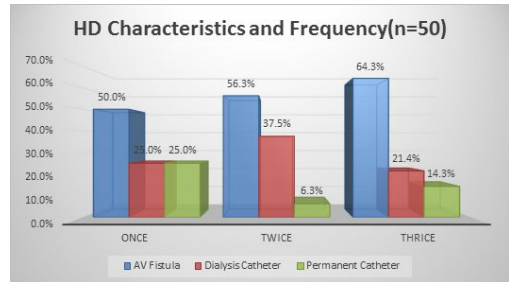### Discussion:

Chronic kidney disease (CKD)—or chronic renal failure (CRF), as it was historically termed—is a term that encompasses all degrees of decreased renal function, from damaged–at risk through mild, moderate, and severe chronic kidney failure. CKD is a worldwide public health problem. The Kidney Disease Outcomes Quality Initiative (KDOQI) of the National Kidney Foundation (NKF) established a definition and classification of CKD in 2002 (2). The guidelines define CKD as either kidney damage or a decreased glomerular filtration rate (GFR) of less than 60 mL/min/1.73 m2 for at least 3 months. Whatever the underlying etiology, once the loss of nephrons and reduction of functional renal mass reaches a certain point, the remaining nephrons begin a process of irreversible sclerosis that leads to a progressive decline in the GFR. Patients with CKD stages 1-3 are generally asymptomatic. Typically, it is not until stages 4-5 (GFR <30 mL/min/1.73 m$_2$) that endocrine metabolic derangements or disturbances in water or electrolyte balance become clinically evident. At every age, patients with ESRD on dialysis have significantly increased mortality when compared with nondialysis patients and individuals without kidney disease. At age 60 years, a healthy person can expect to live for more than 20 years, whereas the life expectancy of a patient aged 60 years who is starting hemodialysis is closer to 4 years. Among patients aged 65 years or older who have ESRD, mortality rates are 6 times higher than in the general population (3).

The most common cause of sudden death in patients with ESRD is hyperkalemia, which often follows missed dialysis or dietary indiscretion. The most common cause of death overall in the dialysis population is cardiovascular disease; cardiovascular mortality is 10-20 times higher in dialysis patients than in the general population (4).

The morbidity and mortality of dialysis patients is much higher in the United States than in most other countries, which is probably a consequence of selection bias. Because of liberal criteria for receiving government-funded dialysis in the United States and the use of rationing (medical and economic) in most other countries, US patients receiving dialysis are on the average older and sicker than those in other countries.

In the National Health and Nutrition Examination Survey (NHANES) III prevalence study, hypoalbuminemia (a marker of protein-energy malnutrition and a powerful predictive marker of mortality in dialysis patients, as well as in the general population) was independently associated with low bicarbonate, as well as with the inflammatory marker C-reactive protein. A study by Raphael et al

suggests that higher serum bicarbonate levels are associated with better survival and renal outcomes in African Americans (5).

For the treatment of any disease two important factors need to be considered- availability and affordability. As far as India is concerned, there is shortage of nephrologists as well as haemodialysis units and the cost of treatment makes the treatment inaccessible for most.

Conclusion:

Our study tried to analyze the clinical profile of patients of chronic kidney disease and impact of hemodialysis on their outcome. These findings enable the early identification of patients at risk, enabling improvements and adjustment in the care of patients on hemodialysis and therefore improvement in survival of such patients. Patients diagnosed earlier with CKD and started on planned dialysis tend to have lower mortality rates.

References

1. Cambi V. Dialysis strategies. In: Davison AM, Cameron JS, Grünfeld JP, Kerr DN, Ritz E, Winearls CG, editors. Oxford Textbook of Clinical Nephrology. 3rd ed. Vol. 3. New York: Oxford University Press Inc; 2005. pp. 1899–908.
2. Guideline Levey AS, Coresh J, Balk E, Kausz AT, Levin A, Steffes MW, et al. National Kidney Foundation practice guidelines for chronic kidney disease: evaluation, classification, and stratification. Ann Intern Med. 2003 July 15. 139(2):137-47. http://reference.medscape.com/medline/abstract/12859163.
3. United States Renal Data System. 2011 Annual Data Report. Available at http://www.usrds.org/adr.aspx. Accessed: Sept 6, 2016.
4. Wald R, Yan AT, Perl J, et al. Regression of left ventricular mass following conversion from conventional hemodialysis to thrice weekly in-centre nocturnal hemodialysis. BMC Nephrol. 2012 Jan 19. 13(1):3. http://reference.medscape.com/medline/abstract/22260388.
5. Raphael KL, Wei G, Baird BC, Greene T, Beddhu S. Higher serum bicarbonate levels within the normal range are associated with better survival and renal outcomes in African Americans. Kidney Int. 2011 Feb. 79(3):356-62. http://reference.medscape.com/medline/abstract/20962743.