Original Research Article

Prevalence of end stage renal disease and associated conditions in hemodialysis Iraqi patients

Fuad Abdullah Dhaidan*

Department of Internal Medicine, Al Karama Teaching Hospital, Baghdad, Iraq

*Correspondence:
Dr. Fuad Abdullah Dhaidan,
E-mail: fharthy16@yahoo.com

ABSTRACT

Background: Chronic Kidney Disease (CKD) is the third most common non-communicable disease throughout the world. Most of the patients with chronic kidney disease suffer from hypertension, diabetes and with glomerulonephritis. Many of these CKD patients ultimately terminate to End Stage Renal Disease (ESRD) when life is not sustainable unless hemodialysis is initiated. This study was to identify systemic and renal disease leading to ESRD requiring hemodialysis and associated co-morbidities.

Methods: Data was collected from three selected three hemodialysis centers in three hospitals during one-year study in Iraq. Patients were selected purposively who were available at the time of interview. Data was collected on working days at three shifts. these data collected from patients and their relatives in these centers after taking informed consent from patients the pre-tested questionnaire was filled up by taking general history, family history, socioeconomic condition, drug history and available records were reviewed for collecting previous biochemical parameters. All entered data were analyzed by using SPSS program.

Results: Among total 400 subjects, male was 260 (65%) and female 140 (35%). Majority of patients were middle aged. Glomerulonephritis were found to be the leading cause of End Stage Renal Disease (ESRD) (50.4%), followed by diabetes in 31.1%, Poly Cystic Kidney Disease (PKD) 5.3%, Renal Stone in 3.7% and rest other. Among the study population hypertension was the most common co morbidity disease (63%) followed by ischemic heart disease and Cerebrovascular accidents.

Conclusions: The leading cause of End Stage Renal Disease (ESRD) was the glomerulonephritis and diabetic nephropathy was the second common cause. Hypertension was the most common associated co morbid disease.

Keywords: Disease, End stage, Hemodialysis, Renal

INTRODUCTION

Chronic Kidney Disease (CKD) is one of the most common non communicable diseases through out the world. Studies have shown that kidney patients suffer from glomerulonephritis, hypertension, and diabetes mostly.[1,2] According to the data of Iraqi Renal Registry report almost two hundred thousand of Iraqi adults are suffering from various stages of Chronic Kidney Disease (CKD). Now-a day's silent CKD has been proposed as an out break or epidemic by many researcher.[3]

The kidneys also function as a part of the endocrine system producing erythropoietin and calcitriol. Erythropoietin is involved in the production of red blood cells and calcitriol plays a role in bone formation.[4] Maintenance hemodialysis (MHD) is a treatment to replace kidney function but it does not correct the

hormonal functions of the kidney. Therefore, Chronic Kidney Disease (CKD) is considered as a devastating endemic.[5]

Untreated Chronic Kidney Disease (CKD) progresses to End Stage Renal Disease (ESRD) which necessitates Dialysis. Several studies showed closer link of uncontrolled hypertension, dyslipidemia and diabetes with Chronic Kidney Disease (CKD). Chronic kidney disease, as defined by hematuria, proteinuria or decreased estimated glomerular filtration rate (eGFR), affects about 12% of the adult population in the United States. Chronic Kidney Disease (CKD) frequently occurs in association with diabetes and hypertension, suggesting that vascular disease is a likely cause in many people.[2,4]

Although there are various causes of kidney diseases like, diabetes causing diabetic nephropathy, hypertension resulting hypertensive nephropathy.[6]

Therefore, estimation of prevalence of etiology in primary kidney diseases patients attending the hemodialyisis varies from country to country in Iraq, there are very few studies conducted regarding the etiological background of Chronic Kidney Disease, with this backdrop this study was conducted among the Chronic Kidney Disease (CKD) patients on hemodialysis to determine the proportion of different types of primary cause of Chronic Kidney Disease (CKD).[4] This study aimed at looking into the causes of Chronic Kidney Disease (CKD) and/or ESRD mainly attending the hemodialysis centres. So, the objectives of this study as follows:

- To determine the types of primary diseases leading to end stage renal disease.

- To determine the association of co morbidities and socioeconomic factors with end stage renal disease.

METHODS

The study was a cross sectional study which was conducted between October 2016 to October 2017. This study was conducted at the hemodialysis units (HDU) of three major Iraqi hospitals in Baghdad including Alkarama teaching hospital, Alyarmook teaching hospital and Baghdad teaching hospital at Baghdad city. Patients selected were on fixed dialysis programs or referred from other hospitals in addition to emergency dialysis patients.

Target patients

When patients are in renal failure, then in course of time they develop mild, moderate and severe renal failure. Finally, this turns into severe renal failure or End Stage Renal Disease (ESRD). In ESRD life is maintained by hemodialysis. This service is provided by hemodialysis centers in specialized hospitals and also at private renal

units. Patients take dialysis in these centers 2-3 times weekly in a session of 3-4 hours on average.

Sample size

Sample size was estimated to be 400 based on the fact that highest prevalence of chronic glomerulonephritis estimated to be around 40 % for ESRD (According to Iraqi Renal Registry report).

Data collection procedure

By purposive selection six haemodialysis units of Dhaka city were taken for this study. After taking informed consent from patients the pre-tested questionnaire was filled up by taking general history, family history, socioeconomic condition, drug history and available records for collecting previous biochemical parameters like values of serum creatinine, blood glucose, urinalysis, UTP, ultrasound reports and biopsy results. Data was taken from patients willing to give consent for this survey and the history was cross checked with attendants, hemodialysis unit staffs and medical records.

Inclusion criteria

Maintenance haemodialysis subjects getting hemodialysis through arteriovenous fistula (AVF) in hemodialysis units of selected haemodialysis centers.

Exclusion criteria

- Patient with acute renal failure
- Patients with history of any recent operations.

Statistical analysis

After collection of data, all data were checked for its consistency. Quality control was maintained by editing the data. The data were entered in SPSS programme with coding against each variable.

Ethical consideration

Subjects those gave informed consent was explained regarding the study. Patients' confidentiality was preserved all the times.

RESULTS

Among the total 440 participants, the results show that majority of patient had secondary education, followed by primary education, 22.5% had earned a university degree, and less than 7% were postgraduates (Table 1).

In regard to primary disease of the kidney, it was found that Glomerulonephritis (GN). Was the most prevalent condition among the sample. Diabetic Nephropathy (DN).

Table 1: Distribution of educational status.

Educational status	Number (n=400)	Percentage (%)
Primary or less	102	25.50
Secondary	181	45.25
Graduate	90	22.50
Postgraduate	27	6.75
Total	400	100

Contributed to about third of the cases while there was about 16.7% undetermined cause. Hypertension, Obstructive uropathy and Chronic pyelonephritis were represented with 0.7%. Renal stones occurred in 4% of the sample (Table 2).

Table 2: Distribution of primary diseases.

Primary disease	Number (n=300)	Percentage (%)
Glomerulonephritis(GN)	122	40.66
Diabetic Nephropathy (DN)	95	32.7
Polycystic Kidney disease(PKD)	15	5
Renal Stone	12	4
Hypertension(HTN)	2	0.7
Obstructive uropathy (OU)	2	0.7
Chronic pyelonephritis (CPN)	2	0.7
Undetermined	50	16.7

Frequency of dialysis among the sample was highly influenced by those needed dialysis more than once. Those who needed twice weekly was more frequent than thrice weekly. Very small proportion of the sample had one session of dialysis per week (Table 3).

Table: 3: Hemodialysis session among the subjects.

Hemodialysis frequency	Number (n=360)	Percentage (%)
1/wk	11	3.05
2/wk	269	74.7
3/wk	80	22.2

Findings show that hypertension was the most common associated disease (66.7%), among the study population. Ischemic Heart Disease counted for 18.3% of the causes while Cerebrovascular disease represent 4%. Ischemic Heart Disease and Retinopathy occurred in 1.3% and all the rest comorbidities were linked to hypertension (Table 4).

DISCUSSION

In this study 400 patients on maintenance haemodialysis were evaluated. They were selected from three haemodialysis centers of Baghdad city. Majority subjects were middle aged. Primary aim was to identify the etiology of primary renal disease, leading to develop End Stage Renal Disease (ESRD). Which was glomerulonephritis (40.6%), then diabetic nephropathy (32%) and rest others (Table 2).

Table: 4: Co morbidity statuses among patients.

Co diseases	Number (n=300)	Percentage (%)
Hypertension	200	66.7
Hypertension, Ischemic heart disease	55	18.3
Hypertension and cerebrovascular disease	12	4
Hypertension and Retinopathy	9	3
Hypertension, Ischemic heart disease and cerebrovascular disease	5	1.7
Hypertension, Ischemic heart disease and retinopathy	4	1.3
Others	15	5

The reported contribution of diabetes ranged from 9.1% in Egypt to 29.9% in Thailand.[7,8] Hypertensive nephrosclerosis accounted for 13% to 21% of reported End Stage Renal Disease (ESRD). But the range is much wider in other reports, spanning between 4% in the Sudan and 43% in Nigeria.[9]

Normally patients on maintenance haemodialysis are advised to take three sessions of dialysis per week. In this study around 75% patients took twice weekly dialysis followed by thrice and once per week (Table 3). The frequency of lower rate of haemodialysis session taken by the study subjects is a reflection of poor socioeconomic status. According to United Nations International Children's Emergency Fund (UNICEF), literacy rates are 50% among men, 31% among females.[10] Present study reveals 50% of patients didn't attend higher secondary classes and less than one percent completed doctoral degree. (Table 1).

Among the study population hypertension was the most common associated disease (96%), (Table 4) and all the rest co morbidities were ischemic heart disease, cerebrovascular disease and retinopathy linked to hypertension.[11]

The most of the studies conducted regarding this issues in different countries showed the similar pattern of primary diseases. In our study it has been found that, majority of the subjects were middle aged, average income group and less educated. Two major causes of end stage renal disease were glomerulonephritis and diabetic nephropathy.[12] The commonest comorbidity among them

was hypertension. Inadequate number of dialysis session was resulted in higher serum creatinine and lower hemoglobin level which could be explained by their average to low economic status.

A larger study with more patient number is needed including bigger number of dialysis centers to identify prevalence of primary renal diseases among haemodialysis patients.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Francesco PS. Epidemiology of end-stage renal disease: International comparisons of renal replacement therapy. Kidney International. 2000;57(74):S-39-S-45.
2. Renal Data System. USRDS; Annual Data Report. Bethesda: National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases; 1996.
3. Stevens LA, Viswanathan G, Weiner DE. CKD and ESRD in the Elderly: Current Prevalence, Future Projections, and Clinical Significance. Adv Chronic Kidney Dis. 2010 July;17(4):293-301.
4. MV. More frequent hemodialysis: back to the future? In: Advances in Chronic Kidney Disease. 2007;14(3):e1-9.
5. De Vecchi AF, Dratwa M, Wiedemann ME. Healthcare systems and end-stage renal disease (ESRD) the rapiesan international review: costs and reimbursement/funding of ESRD therapies. Nephrol Dial Transplant. 1999;14(6):31-41.
6. Berthoux F, Jones E, Gellert R, Mendel S, Saker L, Briggs D. Epidemiological data of treated end-stage renal failure in the European Union (EU) during the year 1995: report of the European Renal Association Registry and the National Registries. Nephrology Dialysis Transplantation. 1999 Oct 1;14(10):2332-42.
7. Ahmad S, Misra M, Hoenich N, Daugirdas J. Hemodialysis Apparatus. In: Handbook of Dialysis. 4th Ed. New York, NY; 2008:59-78.
8. Jha V, Chugh KS. Dialysis in developing countries: Priorities and obstacles. Nephrology 1996; 2: 65-72.
9. Li L. Nephrology forum. End-stage renal disease in China. Kidney Int. 1996;49:287-301.
10. Abbasi MA, Chertow GM, Hall YN. End-stage renal disease. BMJ clinical evidence. 2010;2010.
11. Goodman WG, Goldin J, Kuizon BD, Yoon C, Gales B, Sider D, et al. Coronary-artery calcification in young adults with end-stage renal disease who are undergoing dialysis. New England Journal of Medicine. 2000;342(20):1478-83.
12. Hsu CY, McCulloch CE, Iribarren C, Darbinian J, Go AS. Body mass index and risk for end-stage renal disease. Annals of internal medicine. 2006;144(1):21-8.