

Diabetes Among Haemodialysis Patients in Teaching Hospital Batticaloa, Srilanka

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Abstract: *Background:* Diabetic kidney disease (DKD) is common in people with type-2 diabetes (T2DM). This is because T2DM is much more common than type-1 diabetes (T1DM). Diabetic kidney disease is actually the most common cause of kidney failure. Microalbuminuria or proteinuria is rarely present at the time when the diabetes is first diagnosed. By five years after the diagnosis of diabetes, about 1 in 7 people will have developed microalbuminuria. After 30 years, about 4 in 10 people will have developed microalbuminuria. Some people with microalbuminuria progress to proteinuria and kidney failure. Around one in five people needing dialysis have diabetic kidney disease. *Methodology:* A Prospective, observational study of patients with end-stage kidney disease (ESRD) come for dialysis to the Teaching Hospital Batticaloa Sri Lanka. The study was conducted from mid of September 2017 to end of November 2017. Diabetes is the leading cause of end-stage of kidney disease (ESKD) in most developed countries and has driven growth in ESKD globally over recent decades. *Results:* Most common etiology in the present study was diabetic nephropathy (54.8%) followed by hypertensive nephropathy (30.4%) and ADPKD (2%). However, the prevalence of ESKD has been equally observed among middle and elders populations. Current approaches are not adequate because the number of patients who develop DKD or have progressive DKD continues to increase. Screening for diabetic nephropathy with early intervention is essential to delaying its progression in conjunction with providing proper glycemic control.

Keywords: Diabetic Kidney disease, Chronic Kidney Disease (CKD), End Stage Renal Disease (ESRD)

1. Introduction

Chronic kidney disease (CKD) affects several millions of people worldwide every year, including Sri Lanka. Approximately 1 in 10 people around the world have been diagnosed with chronic kidney disease, and even young people are susceptible to it. The main causes and risk factors for kidney disease are diabetes [1] and high blood pressure (also known as hypertension). Diabetic kidney disease (DKD) is a risk factor for cardiovascular disease and is a leading cause of end-stage renal disease (ESRD) in worldwide. The prevalence of diabetes around the world has reached epidemic proportions [2]. This is anticipated to propagate to over 550 million people by the year 2035 [3]. It has been estimated that more than 40% of people with diabetes will develop chronic kidney disease (CKD) [4] including a significant number who will develop ESKD requiring renal replacement therapies [5].

In Sri Lanka, chronic kidney disease of unknown etiology (CKDu) has become a major health issue over the past two decades. This is a different form of kidney disease, which is not associated with conventional risk factors such as diabetes and hypertension. Diabetic nephropathy can be detected by the measurement of urine albumin or serum creatinine, and both tests should be performed at a minimum annually. In addition, the prevalence of albuminuria in diabetic Asian males was higher than that in diabetic European males. Therefore, additional efforts are needed to prevent DKD and to delay disease progression [6]. Increased albumin excretion is not only a marker for early diabetic kidney disease but also for increased risk for macrovascular disease. Diabetic nephropathy affects approximately 20–40% of individuals who have diabetes. DKD is more frequent in African-Americans, Asian-Americans, and Native Americans. Progressive kidney disease is more frequent in Caucasians patients with type 1 than type 2 diabetes mellitus

(T2DM), although its overall prevalence in the diabetic population is higher in patients with T2DM while this type of DM is more prevalent. The aim of this study is to see the prevalence of diabetes among dialysis patients in the Batticaloa district in Sri Lanka

2. Methodology

A Prospective, observational study of patients with end-stage kidney disease (ESRD) come for dialysis to the Teaching Hospital Batticaloa Sri Lanka. The study was conducted from mid of September 2017 to end of November 2017. All the patients who were admitted for dialysis were included in this study. However, we reached appropriate sample size after considering inclusion and exclusion criteria. Detailed clinical history, general and systemic examination of all patients was performed including ophthalmoscope examination. Fundoscopy findings were considered as supportive evidence to label diabetic and hypertensive nephropathy. ECG and 2D-ECHO findings of left ventricular hypertrophy were considered as a supportive evidence for hypertensive nephropathy. The study subjects were given information about the study by using patient information sheet in a language understood by them and written informed consent was obtained from participants included in the study.

Inclusion Criteria: A total of 48 patients, older than 12 years who were on maintenance hemodialysis on the outpatient basis for more than 3 months were included in this study.

Exclusion Criteria: Patients with malignancy involving one or both kidneys, patients who undergo renal transplant and those who are not willing to participate in this study were excluded.

3. Result

In our study, out of 42 patients there were 25(59.5%) males and 17(40.5%) females. There was a male: female ratio of 1.47:1. The youngest patient was 19 years of age and the oldest was 68 years of age. This shows the broad variation in age in our study group highlighting the preponderance of ESRD across a very large age group. In this study nearly half of the patients 20 (47.6%) were in the age group of 50-69 and another half of the patients 21(49.1%) were in the age group of 20-40(Table 1). It highlighting that ESRD is common in middle to elderly age groups. Most common etiology in the present study was diabetic nephropathy (54.8%) followed by hypertensive nephropathy (30.4%) and ADPKD (2%) (Table -2).

Table 1: Age and Sex Distribution

Age group	Male n (%)	Female (%)	Total (N=42)
<20	1(2.3%)	0	1(2.4%)
20-29	0	3(6.9%)	3(7.1%)
30-39	5(11.5%)	3(6.9%)	8(19%)
40-49	5(11.5%)	5(11.5%)	10(23%)
50-59	10(23%)	1(2.3%)	11(26%)
60-69	4(9.2%)	5(11.5%)	9(21.4%)
Total	25	17	42(100%)

Table 2: Etiology of End Stage Renal Disease

Etiology	Patients (N = 42) n (%)
Diabetes	23(54.7%)
Hypertention	10(23.8%)
Chronic glomerulonephritis	1(2.3%)
Adult polycystic kidney disease	2(4.6%)
Unknown etiology	4(9.2%)
Obstructive uropathy	2(4.6%)

4. Discussion

Diabetes mellitus is one of the most important health problems worldwide, and its prevalence is increasing. One of the complications of DM is diabetic nephropathy (DN), which is responsible for over 40% of cases of chronic kidney disease requiring dialysis or kidney transplantation in the Western world [7]. At younger ages, microalbuminuria predominates however in older age reduced glomerular filtration rate (GFR) is increasingly prevalent among cases with DKD. This prevalence was ranging between 25% in patients younger than 65 years old to nearly 50% with age older than 65 years [8]. However, in our study half of patients 20(47.6%) were in the age group of 50-69 and another half of the patients were in the age group of 20-40 years which, highlighting that ESRD is common in mid to elderly age groups. In contrast, a study conducted in India which has been shown that most patients (38%) were in the age group of 51-70[9]. In our study, out of 42 patients there were 25(59.5%) males and 17(40.5%) females. There was a male: female ratio of 1.47:1. A similar study conducted by Modi et al in Indian where found that means age was 47 years and 58% patients were males [10]. In fact, this pattern of sex distribution has been observed in our study as well. As a whole ESRD is more prevalence among male than female.

Diabetes mellitus (DM) is one of the most important health problems worldwide, and its prevalence is increasing. One of the complications of DM is diabetic nephropathy (DN), which is responsible for over 40% of cases of chronic kidney disease requiring dialysis or kidney transplantation in the Western world [11].

Most common etiology in the present study was diabetic nephropathy (54.7%) followed by hypertensive nephropathy (23.8%), we couldn't found the etiology in 9.2% of patients it was labeled as chronic kidney disease of unknown(CKDu) etiology, chronic glomerulonephritis (2.3%), obstructive uropathy (4.6%), and chronic pyelonephritis (2.3%). Furthermore, a study conducted in India where common causes of CKD are diabetic nephropathy (29.2%), Hypertensive nephrosclerosis (14.4%), chronic glomerulonephritis, (14.2%), chronic interstitial nephritis (7.1%), Obstructive uropathy (4%), ADPKD (2.9%) and undetermined etiology in (15.7%). This is clearly indicated that almost double the percentage of DKD was seen among ESRD patients in our study. Another study conducted by Jha et al in India where diabetic nephropathy in 31.2% patients, hypertensive nephropathy in 12.8% patients and unknown etiology in 16.4% of patients [12].

The prevalence of diabetes around the world has reached epidemic proportions. This is predicted to grow to over 550 million people by the year 2035. It has been estimated that more than 40% of people with diabetes will develop chronic kidney disease (CKD) Diabetic kidney disease is uncommon if diabetes is less than one decade duration. The highest incidence rates of 3% per year are on average seen 10 to 20 years after diabetes onset, after which the rate of nephropathy tapers off. Inhibitors of the renin-angiotensin-aldosterone system (RAAS) efficiently slow the progression of established proteinuric diabetic kidney disease, but these agents do not prevent diabetic kidney disease. Recent studies with renal biopsies show that the incidence of non-diabetic nephropathy (NDN) among diabetic patients is higher than expected. However, recent studies have shown that patients with biopsy-proven DKD may be normoalbuminuric [13]. Therefore, further studies with larger cohorts and ideally renal biopsy confirmation are necessary to find factors better predicting NDN in type 2 diabetic patients [14].

5. Conclusion

Screening for diabetic nephropathy with early intervention is essential to delaying its progression in conjunction with providing proper glycemic control. The prevalence of diabetes worldwide has extended epidemic magnitudes and is expected to affect more than 350 million people by the year 2035. Hyperglycemia is the well-known risk factor for DKD and it recognized that intensive glucose control reduces the risk of DKD in T1DM. The incidence of DKD and rates of its development are less clear in T2DM compared with T1DM, mainly due to the extremely variable age of onset, complexity of defining the exact time of diabetes onset, and the relative scarcity of long-term type 2 diabetes cohorts. On the whole, knowledge regarding the prevention and management of diabetic nephropathy, along with other aspects of diabetes care, is part of the comprehensive care of any patient with diabetes. Prevention

and treatment of diabetic nephropathy and other complications necessitate a multifactorial approach through the use of a diabetologist, nephrologist, dietician and diabetes educator.

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7. Consent For Publication

Written informed consent was obtained from the parents for publication of this article

8. Conflicts Of Interest

The authors declared no competing interests.

9. Ethical Considerations

Ethical issues (including plagiarism, data fabrication, double publication) have been completely observed by the author)

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None.

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