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Impact of Diabetes Mellitus Duration on Most Common Kidney Diseases

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Abstract. Patients who were admitted to several hospitals in the city of Basrah were the subjects of the current study. The study aims to ascertain whether there is a correlation between the occurrence of renal disease and the moment at which type 1 and type 2 diabetes begin. The results of the questionnaire, which was completed by 70 males and females from rural and urban areas, ranging in age from 14 to 80 years, indicated a significant correlation between kidney disease onset and diabetes, with 55.4% of affected patients having type 1 diabetes before type 1 KD and 53.3% having type 2. Age and KD were also significantly correlated at the 0.01 level, as were diabetes type 1 and type 2 (0.777 and 0.795).

Highlights:

1. Study: Examined 70 diabetic patients in Basrah hospitals for kidney disease.
2. Findings: 55.4% with type 1 and 53.3% with type 2 developed KD.
3. Correlation: Diabetes, kidney disease, and age showed significant links ($p < 0.01$).

Keywords: Diabetes, Kidney Disease, Correlation, Basrah, Epidemiology

Introduction

People with diabetes frequently have kidney diseases; up to half will show evidence of renal impairment at some point in patients' lives [1-3]. In Canada, the primary cause of renal disease is diabetes [4,5]. Given that kidney illness is linked to substantial declines in life expectancy and quality, it can be a debilitating consequence [6,7].

Diabetes can cause many different types of chronic kidney disease, for example, hypertensive nephrosclerosis, diabetic nephropathy, ischemic nephropathy associated with vascular disease, and other renal disorders unrelated to diabetes [8,9].

Nearly 4.2 million deaths occur every year due to Diabetes. It leads to many organic and systemic disorders in the cardiovascular, eyes, and kidneys [10,11], and this disease is due to a pancreas disorder (less insulin production) or cell resistance [12]. Men or women are affected with diabetes mellitus at a similar rate [13]. Regarding most kidney diseases, diabetes mellitus is the major cause [14].

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Young and middle-aged individuals are frequently affected by type 1 diabetes, and these patients, often lead to serious illnesses due to microvascular disease resulting from the disease [15] and initiate pathophysiological games with subsequent interactions of altered hydrodynamics [16].

According to the traditional definition, diabetic nephropathy begins with a gradual rise in albuminuria. When the estimated glomerular filtration rate falls below 60 mL/min/1.73 m2, end-stage renal disease advances to a decline [17,18]. Long-term diabetes; poor blood pressure, plasma lipid, and glycemic management; obesity [19]; and cigarette smoking [20] are important risk factors. Normal albuminuria progresses slowly for five years or more, followed by microalbuminuria and then overt renal disease [21,22].

The rate of renal function loss in the early stages of diabetic nephropathy is relatively slow and not significantly greater than that observed in the general population [23]. However, the pace of renal function decline can quicken toward the end of the overt kidney disease phase. Therefore, it is uncommon to observe severe renal failure until the advanced stages of diabetic nephropathy [24].

Methods

The current study was prepared on 55 patients, men and women of different ages, in some hospitals in the city of Basrah. It seeks to determine the correlation between the beginning of renal damage and the length of time a patient has had diabetes. Therefore, prepare a questionnaire that includes demographic information and Information related to the periods of disease onset, whether diabetes mellitus or kidney disease. The collected data was analyzed to extract frequencies, percentages, and correlations using the Spss program

Result and Discussion

The kidney and many organs of the body are affected by many risk factors, and Type 1 or type 2 diabetes development is the biggest risk factor. To accomplish the goal of the study, 70 hospitalized patients will be examined to determine the degree to which kidney disease is linked to the onset of diabetes (45 male and 25 female) participated questionnaire that included living areas (rural and urban) with different groups of age Table 1.

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Table 1: Sociodemographic data of the sample

Characteristics		frequents	percent
male		45	64.3
female		25	35.7
rural		26	37.1
urban		44	62.9
Age	14-20	10	14.28
	21-40	25	35.71
	41-80	35	50.1

Table 2. Frequents and percentage of diseases (n=70).

Diseases		frequents	percent
Kidney		30	24.9
others		40	57.1
Diabetes type 1	before	39	55.7
	after	31	44.3
Diabetes type 2	before	38	53.3
	after	32	45.7

The study also included the frequency and percentages of kidney disease, the incidence of diabetes of both types, and the period of onset of kidney disease, the results of the table also show that the period of diabetes before developing kidney disease is higher than those injuries that appear in the kidneys after developing type 1 and type 2 diabetes. Table 2.

Age, diabetes type 1, and diabetes type 2 were found to be extremely significantly correlated in the study's findings (Table 3).

Table 3. Correlation between kidney diseases and age, diabetes type 1 and diabetes type 2.

	correlation
Age and KD	0.833^{**}

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KD and diabetes type 1	0.777**
KD and diabetes type 1	0.795**

KD=kidney diseases **. Correlation is significant at the 0.01 level (2-tailed

The study's findings indicate that over half of the sample's ages fell between 41 and 80 years.

These results were consistent with different studies [25-27] which mention the majority of the study sample was between 40 and 80 years.

Also, based on the findings of this investigation, most of the patients were from urban areas. This finding side with numerous studies [28-31] which mention that most of the studies were from urban areas.

Chronic kidney disease has become more common in recent years, according to research. This increase is regarded as a threat and an ongoing difficulty. This condition has developed into a persistent health issue that affects societal topography [32]. The hallmarks of diabetic nephropathy include persistent inflammation and the buildup of extracellular matrix proteins in kidney tissue, which causes fibrosis and inflammation. The development of kidney injury is influenced by the pathophysiological alterations listed above [33].

These results have significant ramifications for glucose metabolism as well. Kidney injury can cause the production of inflammatory mediators, which can interfere with insulin signaling pathways and cause insulin resistance [34].

One of the main risk factors for the onset and advancement of renal disease is diabetes, according to studies on the connection between diabetes and chronic kidney disease. Individuals with diabetes have a markedly higher chance of getting chronic kidney disease (CKD) [35], To avoid diabetes in those who are at risk, treating KD involves helping to prevent it [36].

According to the study, glycemic regulation is significantly influenced by the kidneys. Additionally, renal gluconeogenesis plays a major role in maintaining glucose homeostasis in the tubular reabsorption of glucose [37], Thus, there is more to the link between DM and DKD than just a Diabetic patient's risk of kidney disease and the negative impact of both conditions on morbidity and death [38, 39].

Another study [40] concluded that CKD staging and the length of DM were related. Delaying the onset of diabetic renal disease requires glucose management and early CKD

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identification. To limit adverse events and lessen problems associated with diabetes, it is important to maximize diabetes control. According to the findings of a study [41]. A person's stage of chronic kidney disease increases with the length of time they have had diabetes mellitus. Numerous studies with comparable results indicate that the length of diabetes is a risk factor for CKD prediction [42,43].

Conclusion

Diabetes type one and type two prevalence and renal disease are highly correlated, according to the current study. According to the study, a significant portion of kidney damage happens after diabetes, and treating people with diabetes lowers their risk of getting renal disease

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