A two years prospective and interventional study of the different patterns of renal diseases at the Internal Medicine Department, Al-Hussein University Hospital

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Abstract: This study aimed to perform acomprehensive review of the prevalence and patterns of renal diseases at Internal Medicine Department, Al-Hussein Hospital, Al-Azhar University from February 2014 to the end of January 2016. The total number of patients included in this study were 500, their mean age was (52.31± 15.92) years, most of cases were females forming about (51.8 %) of patients. According to the registered data, patients with renal diseases were classified as patients with Acute Kidney Injury (AKI), represented 30.6% of the study population, patients with Chronic Kidney Disease (CKD) on conservative treatment and for follow up, represented 37% of the study population, Patients with Chronic Kidney Disease (CKD) presented with acute on top of chronic with rising serum creatinine due to different clinical problems were 30 patients, represented 6% of the study population and Patients presented from the start with picture of ESRD for regular haemodialysis, represented 26.4% of the study population.

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1. Introduction

Kidney disease is listed as the ninth most common cause of death by the National Center for Health Statistics. Kidney diseases cause 1.8% of all deaths in USA ***(1).*** Kidney disease is a serious and expanding problem. Three years mortality of ESRD is greater than 50%. More than 10% of the US population has some sort of chronic kidney disease. Diabetes and hypertension are the primary cause of kidney disease in more than 70% of cases. However, most patients are unaware of their declining kidney function until it is in its late stages ***(2).*** Lack of awareness and appropriate management of potential underlying kidney disease even in high risk patients seems to be common in many parts of the world, even though many of the measures recognized to decrease the risk and slow the progression of kidney disease are most effective when initiated early ***(3).*** Ourstudy aimed to perform acomprehensive review of the prevalence and patterns of renal diseases at Internal Medicine Department, Al-Hussein Hospital, Al-Azhar University from February 2014 to the end of January 2016.

2. Patients and methods

This is a prospective and interventional study of all patients with any type of renal injury who attended the Internal Medicine Department, Al-Hussein Hospital, Al-Azhar University from February 2014 to the end of January 2016. All patients were assessed nephrologically and classified according to type of kidney injury and received the appropriate intervention according to their presentation. Nephrological assessment includes:

-Detailed medical history including demographic data (name, age, sex, etc…), Comorbid conditions such as diabetes mellitus (DM), hypertension (HTN), cardiovascular diseases, liver diseases, lung diseases, neoplasm, obesity, nephrotoxic drug intake, exposure to contrast media, associated hepatitis B or C or HIV infection and vascular diseases.

- Complete physical examination for all the patients especially for blood pressure, cardiac, chest examination for clinical signs of overloading like congested neck veins, bilateral basal crackles, bilateral lower limb oedema and other physical signs of any associated disease.

-Laboratory assessment that include all basic investigations according to type of kidney injury.

-Pelvi-abdominal ultrasound study and chest X ray when needed.

-Renal biopsy when indicated.

All of them received the appropriate treatment according to the diagnosis suspected.

Statistical analysis was also done. The mean, standard deviation and range of all numerical data were collected and tabulated.

According to the registered data patients with renal diseases were classified as follows:

1. Patients with Acute Kidney Injury (Acute Kidney Injury is defined as rise in serum creatinine more than 30% and changes in the volume of urine output during 1 week (4).

2. Patients with Chronic Kidney Disease (CKD) on conservative treatment and for follow up (CKD is defined as kidney damage or Glomerular Filtration Rate (GFR) Below 60 ml/min per 1.73 m2 for 3 months or more irrespective of the cause (5).

3. Patients with Chronic Kidney Disease (CKD) on conservative treatment presented with acute rising in serum creatinine (Acute on top of chronic).

4. Patients with first presentation of renal disease whom discovered to have end stage renal disease for regular haemodialysis.

Exclusion criteria:

Patients who are known to have chronic renal failure on regular haemodialysis but admitted at the internal medicine department with acute clinical or laboratory indications of haemodialysis or admitted for another medical or surgical indication other than their renal failure.

3. Results

In a two years study from the 1st of February 2014 to the end of January 2016, the total number of patients included in this study were 500, their mean age was (52.31± 15.92) years, most of cases were females forming about (51.8 %) of patients. According to the registered data, patients with renal diseases were classified as follows: 1. Patients with Acute Kidney Injury were 153 patients, represented 30.6% of the study population.2. Patients with Chronic Kidney Disease (CKD) on conservative treatment and for follow up were 185 patients, represented 37% of the study population.3. Patients with Chronic Kidney Disease (CKD) presented with acute on top of chronic with rising serum creatinine due to different clinical problems were 30 patients, represented 6% of the study population.4. Patients presented from the start with picture of ESRD for regular haemodialysis were 132 patients, represented 26.4% of the study population.

Table 1 shows the mean and range of laboratory parameters of all studied patients.

Hypertension was the most common comorbid condition among our patients. It was found in 191 patients represented 38.2% of the total while diabetes mellitus was found in 103 patients out of 500, this represents 20.6% of the total study population.

Among patients with glomerulonephritis (GN) (68 patients), lupus nephritis, with its different classes, was the mostfrequent etiological diagnosis present in 22 patients (32.4%). Focal and segmental glomerulosclerosis was found in 18 patients (26.5%).

4. Discussion

The total number of patients included in this study was 500, 30.6% of them had AKI. The etiology of AKI varied with time ***(6)***. In the past, trauma and surgical causes predominated. Recently, medical causes take the upper hand ***(7) (6).*** Liangos et al described the epidemiology and outcomes of acute kidney injury in a national survey of hospitalized patients in the United States. They found an incidence of 19.2 per 1,000 hospitalizations***(8).*** Furthermore, they found that AKI was more commonly in older patients, male gender, black race, and in the setting of chronic kidney disease, congestive heart failure, chronic lung disease, sepsis, and cardiac surgery. Rashed et al, in their six-month pilot study at a hospital from Qatar, reported an incidence of 0.49% (55 cases out of 11,216 admissions)***(9).***

Patients with CKD on conservative treatment constituted 37% of the all study population while Patients with CKD presented with acute on top of chronic constituted 6% of the study population. They were admitted becauseof acute problems such as pulmonary congestion, hyperkalemia, severe anemia, and gastrointestinal bleeding. Kidney diseases are often detected too late, when the patient is already in end-stage renal diseaseand required renal replacement therapy. Late referral of patients with CKD was defined as a course in arenal unit starting within 16 weeks or less before the start of renal replacement therapy (RRT). Late referral of CKD cases to nephrology practice is a worldwide problem and is associated with increased morbidity and mortality ***(10).***

In this study, 26.5% of all patients presented with glomerulonephritis ended in ESRD. ***Barsoum & Francis 2000*** suggested that glomerulonephritis remains as a major cause of morbidity and mortality from renal disease in many parts of the world, particularly in the tropical and subtropical regions. According to several local registries and sporadic publications, it seems to be responsible for 23.2–58.4% of patients on regular dialysis in the tropics compared with contemporary figures of around 16–18% in the USA and 9–15% in Europe. Its prevalence among dialysis patients in Egypt has been reported to be 16.6% in 1998***(11)***. In this work, great sector of patients with glomerulonephritis responded to treatment (26.5% to corticosteroid and or other immunosuppressive medicine), (19.1%) to supportive treatment, or transient hemodialysis (4.4%), but 26.5% passed to ESRD and 13.2% had been expired. Lupus nephritis was reported in 22 cases (32.4%) among 68 patients and thus, lupus nephritis was the most frequent etiological diagnosis in this category. This is probably related to increased awareness of the disease. Moreover, the adoption of the National

Institute of Health (NIH) protocol for the treatment of lupus nephritis (which requires a renal biopsy to determine the WHO class of lupus nephritis as well as the activity and chronicity index before starting therapy) has enabled most centers to perform renal biopsies more readily than before in systemic lupus erythematosus cases. Regarding FSGS, it was found in 18 cases (26.5%) among 68 patients. This result is in agreement with ***(12)*** who described that FSGS represented 24% of patients with glomerulonephritis. The cause of relatively high prevalence of FSGS in Egypt is not clear. Racial factors have been reported the disease being more in blacks, however, other possible precipitating factors such as genetic, viral infections (hepatitis B and C) socioeconomic status (bilharziasis) or immune system abnormalities.

Table (1): laboratory data of all studied patients:

Parameter	Range	Mean ± SD
Urea(mg/dl)	13-400	137.58±74.97
S. Creatinine(mg/dl)	0.4-23	5.73±3.85
Uric acid(mg/dl)	3-23.5	7.99±2.68
RBS(mg/dl)	24-550	125.6 ± 67.86
WBC(cell/cmm)	600-62000	10710 ± 7440
HB(gm./dl)	3.2-16.9	9.41±2.16
Platelets(cell/cmm)	27-985	232±128.17
S. Calcium(mg/dl)	7-13	8.68±0.97
S. Phosphorous(mg/dl)	1.30-13	5.43±1.74
S. Na mmol/l	102-194	135±8.18
S. K mmol/l	1.10-9.40	4.19±1.10

mg= milligram, dl= deciliter, mmol= millimole, gm=gram

Table (2): Histopathological findings on renal biopsy in patients with GN:

Types of GN		
	NO	**%**
lupus nephritis	**22**	**32.4**
Focal segmental glomerulosclerosis	**18**	**26.5**
Membranous GN	**8**	**11.8**
Membrano-proliferative	**6**	**8.8**
Minimal change	**4**	**5.8**
Crescentic GN	**3**	**4.4**
Amyloid kidney	**2**	**2.9**
Diabetic glomerulosclerosis	**2**	**2.9**
Diffuse proliferative GN	**1**	**1.5**
Mesangio-proliferative GN	**1**	**1.5**
Benign nephrosclerotic changes	**1**	**1.5**
Total	**68**	**100**

In our study the overall number of patients presented for the 1st time with ESRD for regular hemodialysis was 132 patients representing 26.4% of the total study population. The incidence of ESRD is increasing rapidly all over the globe***(13).*** There are many explanations for this increase, e.g. the longevity of life is increasing all over the world and the affordability of treatment of chronic disease like diabetes and hypertension increase the number of patients with ESRD.

The prevalence of HCV was 22% in this study. Egypt has the largest epidemic of HCV in the world. The recently released Egyptian Demographic Health Survey (EDHS) tested a representative sample of the entire country for the HCV antibody. The sample included both urban and rural populations and included all 27 governorates of Egypt. Over 11,000 individuals were tested. The overall prevalence (percentage of individuals) of positivity for the antibody to HCV was14.7% ***(14).***

Hypertension was the most common comorbid condition among our patients. It was found in 191 patients represented 38.2% of the total. Our study was broadly similar to ***Ibrahim et al,*** which showed that hypertension is a major health problem in Egypt with a prevalence rate of 26.3% among the adult population ≥ 25 years and its prevalence increases with aging. Approximately 50% of the Egyptians

above the age of 60 years suffer from hypertension ***(15).***

Diabetes mellitus in our study was found in 103 patients out of 500, this represents 20.6% of the total study population. The data from the Egyptian Demographic Health Survey (EDHS) 2008 showed the crude prevalence rate of diabetes among the adult population in Egypt aged 15–59 years was 4.07% ***(8).***

Conclusion

Kidney disease was a major cause of acute illness among patients admitted at Internal Medicine Department, Al-Hussein Hospital, Al-Azhar University. CKD and acute kidney injury were the predominant reasonsfor admission. Sepsis, HTN, hyperkalemia and atrial fibrillation were significant predictors of mortality in patients with kidney disease. Late referral was associated with high mortality for these patients.

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Ethical approval: All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/ornational research committee and with the 1964 Helsinkideclaration and its later amendments or comparable ethical standards.

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Conflicts of interest

There are no conflicts of interest.

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