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Epidemiologic data of CKD patients hospitalized in the University Hospital Center of Tirana "Mother Teresa" for the period 2012-2015

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Abstract

The Purpose of this study is to provide epidemiologic data about patients with CKD hospitalized at the University Hospital Center of Tirana. CKDs are a growing problem with an increased incidence and prevalence both in Albania and in the world. Comparing current world data with those of 1998, we identify a double increase of them.

Keywords: *epidemiologic data, patients with CKD*

1. INTRODUCTION

CKDs are a group of pathologies characterized by progressive loss of glomerular function. CKDs appear when the glomerular filtration rate is below 60 ml / min / 1.73m^3 for more than three months continuously (1). The most frequent pathologies that cause chronic renal disease are: (2) Diabetes (diabetic nephropathy), HTA, Glomerulonephritis, Renal polycystic kidney disease, Hypertensive nephrosclerosis, Pyelonephitis.

Another classification according to NKF - K / DOQI (National Kidney Foundation - Kidney Disease Outcomes Quality) depending on GFR is the one corresponding to the stage of the disease.

Tab No.1 Classification by CKD and GF stages, according to NKF - K/DOQI (2, 3)

STAGE	GF LEVEL ($ml/min/1.73m^2$)
1	≥ 90
2	60 – 89
3	30 – 59
4	15 – 29
5	< 15

First Stage. This stage represents a slight and almost insignificant decrease of the normal kidney function with normal GFR, which is evidenced by its markers in blood, urine and imaging data (4).

Second Stage. This stage represents a slight reduction of GFR, evidenced by the markers above (4).

Third Stage. This stage represents a moderate reduction of GFR. It is classified according to British nephrology guidelines into two stages 3 A (FG 45-59) and 3B (FG 30-45). (5).

Fourth Stage. This stage represents a severe reduction of GFR and preparation for renal replacement therapy (4).

Fifth Stage. This stage is called Chronic Renal Insufficiency and represents the necessity of applying renal replacement therapy.

CKDs are a growing problem with an increased incidence and prevalence both in Albania and in the world. Comparing current world data with those of 1998, we identify a double increase of them.

The global prevalence is 10 - 15%. Currently only in the United States are over 20 million patients suffering from CKDs. It has been noticed that the incidence is higher in patients who belong to the age group 60+, black people, patients suffering from hypertension etc. CKDs are most common in the elderly population, especially over 65, where 70% of them result in progressive loss of renal function (6).

The most common etiology of CKD is considered diabetic nephropathy (about 50% of patients with CKD have also diabetic nephropathy) meanwhile hypertension is ranked as a second etiologic factor (23% of patients at the terminal stage result from patients as a result of HTA).

The risk factors of pathologies which are included in the term of chronic kidney disease are Diabetes Mellitus, HTA, Cardiovascular Diseases, Obesity, Metabolic Syndrome, Age and Race, Acute Kidney Diseases, Malignant Diseases, Family Predisposition for CKD, Kidney Stones, Infections such as Hepatitis C or HIV, autoimmune diseases, Non-steroidal anti-inflammatory drugs which are nephrotoxic.

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The natural performance of CKD indicates that 1.1% of patients in the second stage within a five year period progress to kidney replacement therapy. Meanwhile, 1.3% of patients in the third stage of SRK progress toward to kidney replacement therapy. This rate is significantly increased for patients of the fourth stage, as about 19.9% of patients in this stage undergo this therapy. It is worth noticing that this pathology is often asymptomatic until its terminal stage. Mortality appears to be quite high around 26%.

Currently in Albania, about 880 patients are treated with hemodialysis in terminal stages of IRK (7).

2. PURPOSE AND OBJECTIVES

The Purpose of this study is to provide epidemiologic data about patients with CKD hospitalized at the University Hospital Center of Tirana.

Specific study objectives:

1. Recognition of demographic data of the population with chronic kidney disease in the study.

2. Evidence of Causes of Basic Disease Causing Chronic Renal Disease.

3. Evidence of the frequency of disease stages in the population surveyed.

4. Determining possible correlations.

3. METHODOLOGY

This study is a retrospective type, conducted at QSUT "Mother Teresa", Statistics Service, based on medical records of patients hospitalized in the period 2012 - 1015 near the Nephrology Service.

The population studied consists on the hospitalized patients at QSUT in the period 2012-2015, in the Nephrology Service. The study population consists of 2,184 medical records of patients throughout this period. The Selection in the study was conducted through those who are carriers of the underlying most common pathologies of CKD such as: Chronic Glomerulonephritis, Chronic Pyelonephritis, Hypertensive Nephropathy, Diabetic Nephropathy, Renal Polycytosis and Lupus Nephropathy.

The data collection of this study consisted in administering an individual cartridge for each medical record. The control of the quality of data collection was carried out through verification of the working procedures and consisted in the review of the whole clinical card.

All the collected data was downloaded to the computer in Microsoft Excel, where they were then exported to the Statistical Package for Social Sciences (SPSS) 20.0, a program in which the whole statistical analysis was performed.

4. RESULTS

According to the analysis of the statistics service database in QSUT, there were 4 082 hospitalizations in the period 2012-2015, from which 3 374 were related to chronic kidney disease.

The table below presents the distribution of these cases according to the basic causative disease. In the "Other" section are included the causative pathologies of CKD that are not mentioned above, eg. Scleroderma, Alport Syndrome, undefined nephrosclerosis, transplant rejection, uric acid nephropathy, obstructive diseases, occlusive artery disease, as well as cases where the leading cause of CKD was not written in the medical record, accounting about 1190 patients with CKD.

Table No.2 Distribution of hospitalizations cases according to diagnosis of basic renal disease causing CKD

Nr.	Basic renal disease causing CKD	No
1.	Chronic Glomerulonephritis	186
2.	Chronic Pyelonephritis	1 283
3.	HTA Nephropathy	123
4.	Diabetic Nephropathy	409
5.	Autosomal dominant polycystic kidney disease	162
6.	Lupus Nephropathy	21
7.	OTHER	1 190

Referring to the results, the largest number of **hospitalizations** of CDK caused by these basic diseases: pyelonephritis with 1 283 cases, second place is diabetes with 409 cases, chronic glomerulonephritis 186 cases, autosomal dominant polycystic kidney disease 162 cases, hypertensive nephropathy 123 cases, meanwhile rare cases are shown in lupus nephropathy patients with 21 cases, this is also related to the prevalence of LES in the population which is low.

Table No. 3 Distribution of CKD by sex and residence.

Variables	**(%)**
Gender	
Male	41.9
Female	58.1
Residence	
Urban	31.1
Rural	68.9
Age*	55.38 ± 14.93

*Average ± SD

58.1% of hospitalized patients are female while 41.9% males.

As for the place of residence, the patients themselves claim that 68.9% of them live in rural areas and 31.1% of them live in urban areas.

Table No.4 Distribution of average age values according to the basic pathology causing SRK.

AGE	AVERAGE	SD	CI95%		MINIMUM	MAXIMUM	F	P VALUE
			LOWER BORDER	UPPER BORDER				
Chronic Glomerulonephritis	51.80	14.44	41.47	62.13	23.00	74.00	2.625	0.032
Chronic pyelonephritis	55.17	12.90	50.27	60.08	33.00	83.00		
HTA nephropaty	61.75	24.13	23.35	100.15	29.00	86.00		
Diabetic nephropathy	59.83	14.33	52.71	66.96	28.00	86.00		
Autosomal dominant polycystic kidney disease	49.00	8.16	36.01	61.99	43.00	61.00		
Lupus nephropathy	34.50	7.05	23.29	45.71	30.00	45.00		
Total	54.72	14.68	51.20	58.25	23.00	86.00		

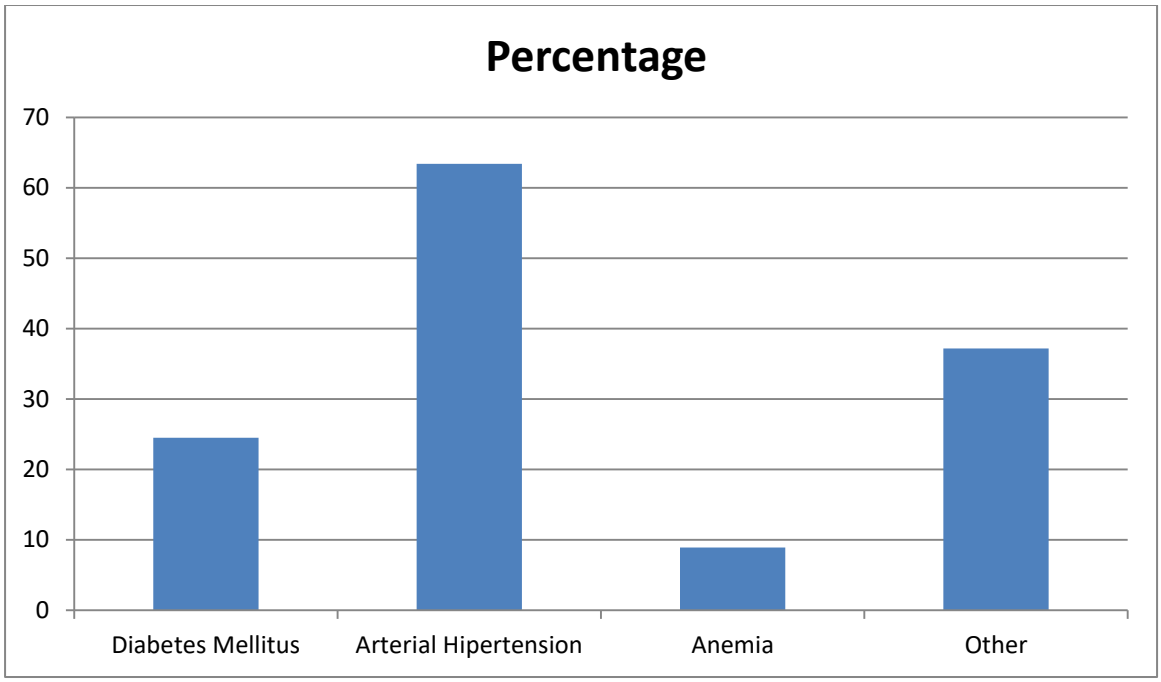
One - way ANOVA analysis (Bonferon procedure) shows that there is a statistically significant difference (p = 0.032) of average age values according to the type of disease.

Hypertensive nephropathy patients (61.75 ± 724.13 years)have the oldest average age value and those with younger average age value are patients with Lupic Nephropathy (35.4 ± 7.05 years).

Table No. 5 Associated Diseases with CDK

Associated Disease	Percentage%
Diabetes Mellitus	24.5
HTA	63.4
Anemia	8.9
Other	37.2

The most commonly associated CDK disorder is HTA with 63.4%, associated with other disorders (dyslipidemias, cardiovascular disorders, fibrillation, renal agenesis, retinopathy, chronic hepatitis, gastritis, chronic tonsillitis, cerebral meningitis, Ca bony, Ca uterus, etc.) 37.2%, Diabetes mellitus 24.5% and Anemia 8.9%.



Graph No. 1 Frequency of associated diseases with CDK.

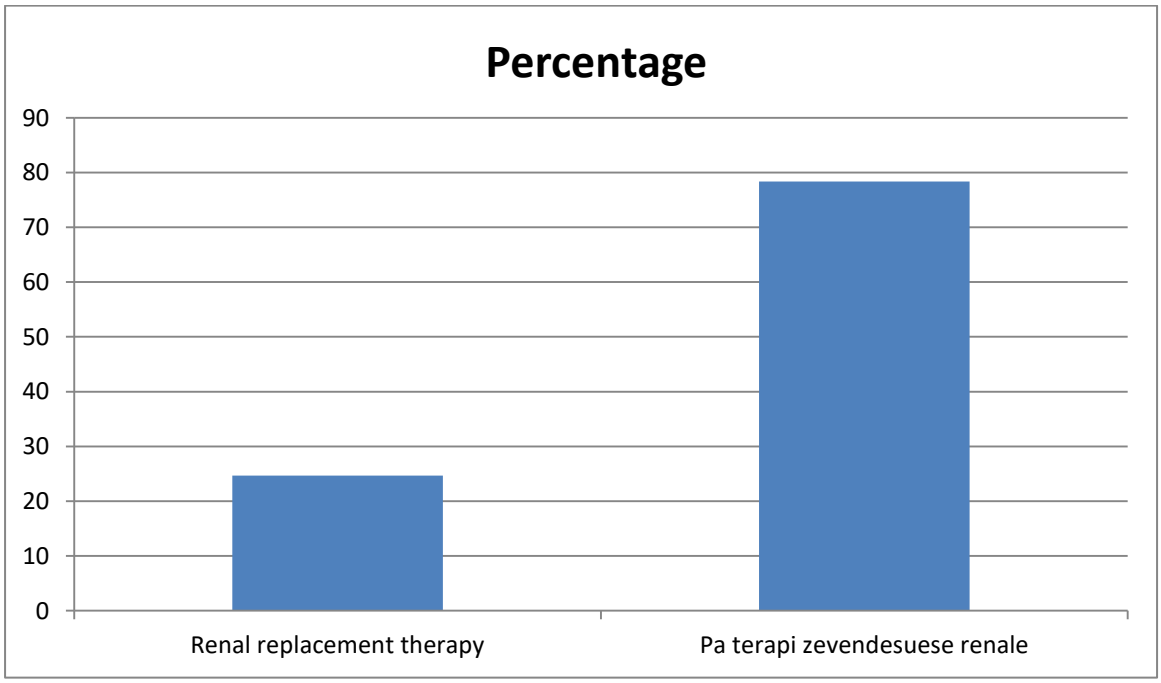
Table No.6 Distribution according to the stages of the disease.

Stage	Percentage
I	2.7
II	6.8
III	40.5
IV	14.9
V	35.1
Total	100.0

Based on the distribution by stage of the disease, patients with CDK III-Stage represent the highest percentage of approximately 40.54%, followed by V- stage with 35.14%, IV-stage 14.9%,II- Stage 6.8 %, I-Stage with only 2,703%.

Table No.7 Distribution by percentage of renal replacement therapy application.

Renal replacement therapy application	No.	Percentage
Yes	539	24.67
No	1 645	78.33



Graph Nr. 2 Percentage Distribution of Renal Replacement Therapy Application.

According to the total number of hospitalized patients with CDK, 78.33% of them are not under renal replacement therapy (hemodialysis and peritoneal dialysis), while 24.67% are under renal replacement therapy (hemodialysis and peritoneal dialysis).

Table No.8 Distribution by type of renal replacement therapy applied

Renal replacement therapy type	No.	Percentage %
Hemodialysis	**491**	**91**
Peritoneal dialysis	**48**	**9**

Among the cases that apply replacement renal therapy most of them belong to hemodialysis 91% and only 9% belong to peritoneal dialysis.

Table no. 9 Distribution by Percentage of Basic Causal Disorder causing SRKs.

Mean disease	Percentage %
Chronic glomerulonephritis	5.5
Chronic pyelonephritis	38
HTA nephropathy	3.6
Diabetic nephropathy	12.1
Autosomal dominant polycystic kidney disease	4.8
Lupus nephropathy	0.6
Other	35.4
Total	100

Based on the distribution of percentage of basic causal disorder causing CDKs, chronic pyelonephritis represents the highest percentage of approximately 38%, followed by Diabetes Mellitus with 12.1%, Glomerulonephritis by 5.5%, Hypertension by 3.6%, Lupus Nephropathy and Autosomal dominant polycystic kidney disease each of both with respectively 0.6 and 4.8%.

5. DISCUSSION AND CONCLUSIONS

In the analysis of the statistics database of the University Hospital Center "Mother Teresa", were selected according to the predetermined diagnosis due to the purpose and objectives of the study (chronic glomerulonephritis, chronic pyelonephritis, hypertension, diabetic nephropathy, renal polycystiosis and lupus nephropathy) 2 184 patients with CDK.

Based on the distribution of the data according to the diagnosis, the first place for the frequency of CDK-based disease represents chronic pyelonephritis with 1 283 cases. They are followed by patients with diabetic nephropathy who consist in 409 hospitalized cases and chronic

glomerulonephritis with 186 cases. Patients with renal polycystosis are 162 cases while patients with nephropathy caused by HTA are 123. The smallest number of cases are reported in the field of nephropathy by LES, due to the low prevalence of this pathology in the population.

It is important to mention that hospitalized patients are mostly women with about 58.1% of the cases taken, while men represent about 41.9%.

Regarding residency in relation to SRK cases, we find that those living in rural areas, which make up the largest percentage, are 68.9%, while those in urban areas 31.1%. It is important to mention that in urban areas, patients come mainly from Tirana, which should be associated with the high number of people living in this city as well as with the immigration over the last two decades.

The average age of patients with CDK who underwent this study is 55.38 years old, a younger age value (over 5 years) compared with the world average age of patients suffering from CDKs. Based on average age distribution according to the mean cause pathologies of SRKs, the highest average age is HTA patients with 61.75 years old, while the lowest age is for patients who develop SRK as a result of LES at 35.4 years. Average age of those with autosomal dominant polycystic kidney disease is 49 years old, while those with diabetic nephropathy have an average age of 59.8 years. These results are related to the time and age of the occurrence of causative CDK disease and the period up to the installation of chronic renal nephropathy.

This study, among other things, pays special attention to the risk factors that progress in CDK. Some of them are also associated diseases such as Hypertension, diabetes, anemia, dyslipidemia, while other risk factors such as smoking, we can emphasize that according to the claim of the patients the male sex consume a relatively high degree of tobacco about 68.3%. While female patients declare that they are rare consumers of tobacco near 11.2% of them.

The most frequent stage of patients with CDKs is the third stage (III) with 40.5% of cases; the fifth stage (V) 35.1% of the cases; the fourth stage (IV) 14.9n%; the second stage (II) is 6.8n% and while the first stage (I) has 2.7% of hospitalized cases, indicating that patients show relatively late the presence of the disease.

According to the total number of hospitalized patients with CDK, 78.33% of them are not under renal replacement therapy (hemodialysis and peritoneal dialysis), while 24.67% are under renal replacement therapy (hemodialysis and peritoneal dialysis). Among the cases that apply renal replacement therapy most of them apply hemodialysis 91% and only 9% peritoneal dialysis.

Based on the distribution of percentage of basic causal disorder causing CDKs, chronic pyelonephritis represents the highest percentage of approximately 38%, followed by Diabetes Mellitus with 12.1%, Glomerulonephritis by 5.5%, Hypertension by 3.6%, Lupus Nephropathy and Autosomal dominant polycystic kidney disease each of both with respectively 0.6 and 4.8%.

The high percentage of hospitalized cases with CDK caused by chronic pyelonephritis is attributed to non-early diagnosis of chronic pyelonephritis, inadequate treatment of its causes

and the appearance of antibiotic resistance. Meanwhile, the decreased percentage of cases of lupus nephropathy is due to the low prevalence of this disease in the population.

6. RECOMMENDATIONS

1. Starting from the average age of CDK patients, their diagnosis is recommended at an early stage. This can be accomplished through the design and implementation of screening programs for early detection, for the treatment and reduction of progress toward terminal stage of CDK in high risk patients.

2. It is recommended that patients should undergo more specific examinations recommended by international guidlines of chronic renal disease, in order to early diagnose and slow down the progression to CDK terminal stage.

3. The prohibition and correct treatment of CDK reduces the number of patients in their terminal stages, significantly improving the quality of life referred to these patients.

4. It is important to treat and avoid the risk factors such as smoking, dyslipidemia, diabetes and HTA, which show to have a strong correlation with the disease.

5. Future hospitalized medical records should reflect more general patient data. Also, the relevant authorities should enable the production of medical records in accordance with the international guidelines of Chronic Renal Disease.

6. In the patient's medical record, doctors should also reflect important elements of risk factors. It is necessary to require their identification on the medical record or be specified in the patient's history.

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