

## END-STAGE RENAL DISEASE IN MISURATA

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### ABSTRACT

The prevalence of End-stage renal disease (ESRD) has been continuously increasing in most of countries. ESRD requiring renal replacement therapy poses a tremendous burden on health care budgets. Unfortunately, there are no studies on the epidemiology and prevalence of ESRD in Misurata city, hence, our study was conducted to assess the prevalence, etiology and risk factors for ESRD patients on haemodialysis (HD) at Misurata city during the year 2005. This is a descriptive study conducted retrospectively by reviewing files of all patients attending haemodialysis unit at Misurata Central Hospital during 2005. The total number of ESRD patients undergoing haemodialysis from January 2005 to December of the same year was 70 patients. Their mean age was 36.4±17.7 years, and of median 37.7 (range 3-69). The male constituted 55.7% while female patients were 44.3% with male to female ratio of 1.25:1. The estimated prevalence of ESRD was 34.71% patients per 100.000 populations. The most common causes of ESRD were diabetes mellitus in 28.5% and hypertension in 17.1% followed in order by undetermined causes in 15.7%, glomerulonephritis in 14.3%, chronic pyelonephritis in 8.6%, drug nephrotoxicity in 5.7%, other less common causes like obstructive uropathy, polycystic kidney disease, gout and IgA nephropathy also was reported in our study. The most common causes of ESRD were found to be DM and HTN, affecting young- age population. This suggests that we need to improve our health care system and implementation of effective reno-protective strategies.

**KEY WORDS:** ESRD, prevalence of dialysis, renal replacement therapy, ESRD risk factor, Misurata.

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### INTRODUCTION

Chronic Kidney Disease (CKD) is a common condition that is often unrecognized until the very advanced stages occur. The incidence of CKD is rising due to the aging of population and higher incidence of diseases, such as Diabetes mellitus (DM) and Hypertension (HTN) in the adult population<sup>(1-4)</sup>.

DM and HTN are emerging as the most common causes of CKD<sup>(5)</sup>. According to the international guideline<sup>(6)</sup>, strict blood pressure control, regulation of calcium /phosphate metabolism and maintaining an optimum hemoglobin concentration are three main essential treatment for Reno-protection and better prognosis in CKD patients.

Since renal replacement therapy (RRT) for end-stage renal disease (ESRD) became widely available in 1960s, the number of prevalent patients on RRT has continued to rise at an alarming rate<sup>(7)</sup>.

The prevalence of ESRD has been continuously increased in most of countries: it is currently higher than 2000 pmp in Japan, about 1500 pmp in the US, and

about 800 pmp in the European Union. Yet, in the developing countries, the figures vary from less than 100 pmp in sub-saharan Africa and India to about 600 pmp in Saudi Arabia<sup>(8)</sup>. ESRD requiring RRT poses a tremendous burden on health care budgets, even for highly developed countries<sup>(9)</sup>. In the developing countries the real prevalence of Chronic Renal Failure (CRF) is difficult to be determined since medical facilities are limited. In the absence of a central medical registry, the only data available are center-based<sup>(10)</sup>. Unfortunately, there are no studies on the epidemiology and prevalence of CRF in the city of Misurata. Haemodialysis (HD) represents the only mode of renal replacement therapy in our area.

### AIM OF THE STUDY

The aim of this study is to assess the prevalence, etiology and risk factors for ESRD patients on HD at Misurata city during the year of 2005.

### PATIENTS AND METHODS

This study was conducted at Misurata Central Hospital, a 500-bed capacity teaching hospital established in 1973. The hospital has a catchment population of approximately 350,000 persons.

This is a descriptive study done retrospectively by reviewing the files of all patients attending Haemodialysis unit at Misurata Central Hospital during the year of 2005. There were 24 haemodialysis stations serving over 210 sessions per week. A total of 70 pa-

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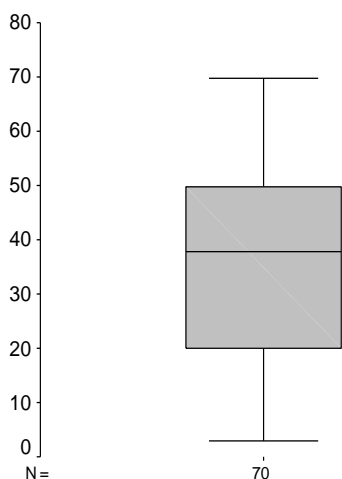
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tients were on haemodialysis programmed at the time of the study with a rate of 3 sessions per week of 3-hours duration. Data of the study include age, sex, and other risk factors like diabetes mellitus, hypertension, family history of renal failure and history of other diseases of genetic and autoimmune basis were obtained. Renal biopsy had been performed in only 2 cases (2.8%) at some time in the course of the disease and both were performed out of the hospital. All data were analyzed by using the statistical package for social science (SPSS program). Data were expressed as frequency and percentage and then displayed in appropriate tables and figures.

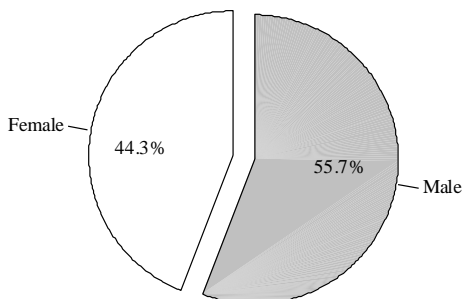
**RESULTS**

The results showed that all the 70 patients were on regular haemodialysis at the rate of 3 times/week. Their ages ranged from 3 to 69 years with median age at starting HD 37.7 with mean ± standard deviation of 36.4± 17.7 as shown in (figure 1).



(Figure 1) Age distribution of patients at starting haemodialysis

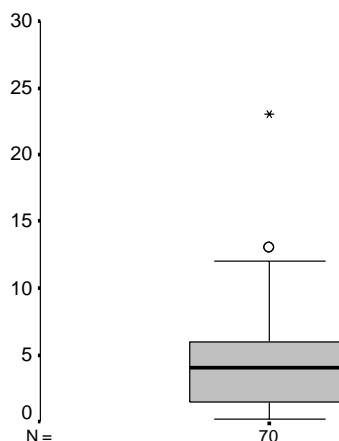
The male group constituted 55.7% (39 patients) of the study population and the female group 44.3% (31 patients) with male to female, with a male to female ratio of 1.25:1 as seen in (figure 2).



(Figure 2) Distribution of gender among the studied group

The estimated prevalence of ESRD was 34.71 patients per 100.000 population. The result showed that the minimum duration of haemodialysis is about 6 weeks and the maximum is 23

years with mean ± standard deviation duration of 4.65± 3.99 years and median of 4 years as can be seen in (figure 3).



(Figure 3) Duration of haemodialysis among the studied group

(Table 1) shows that history of diabetes mellitus (DM) and hypertension (HTN) were obtained from 28.5% (20 patients), 17.1% (12 patients) respectively and they were considered the most prevalent among patients with ESRD on regular HD. Other important causes are chronic glomerulonephritis, chronic pyelonephritis and drug nephrotoxicity (14.3% , 8.6% and 5.7%) respectively. Other less common causes include obstructive uropathy, polycystic kidney disease, gout, and IgA nephropathy(4.3% , 2.8% , 1.4% and 1.4%) respectively. The etiology of ESRD was not known in 15.7% of all the patients.

(Table 1) Causes of ESRD among the studied group

History of risk factor	Frequency	%
Diabetes	20	28.5
Hypertension	12	17.1
Undetermined	11	15.7
Ch G.N	10	14.3
Chronic Pyelonephritis	6	8.6
Drug ephrotoxicity	4	5.7
Obstructive ropathy	3	4.3
poly cystic Kidney	2	2.8
Gout	1	1.4
IgA Nephropathy	1	1.5
Total	70	100%

**DISCUSSION**

This epidemiological study provides the first retrospective evaluation of ESRD undergoing haemodialysis in Misurata area. Intermittent haemodialysis is the only option of renal replacement therapy available. There is no use of other modalities of dialysis like peritoneal dialysis, due to shortage in training for this kind of treatment and renal transplant is also limited because of the shortage of donors.

Renal biopsy is not practiced in our hospitals due to the lack of facility. The two biopsies that were reported in this study had been performed abroad.

The prevalence rate of ESRD on HD in Misurata area can be estimated after adding 33 patients from Alzarouk dialysis center and the total of Misurata population according to the last national population census of the year 2004 which was 296.735<sup>(11)</sup>.

The prevalence rate is approximately 34.71 per 100.000 populations. This rate if adjusted to millions of population will be near that estimated for the Mediterranean region of 312 to 352 pmp<sup>(12, 13)</sup>, but higher than that reported in Egypt (El-minia Governorate) 260 pmp in 2005<sup>(14)</sup>. It was less than that reported in the US, European union and Saudi Arabia which were found to be 1500, 800, 600 pmp, respectively<sup>(8)</sup>.

These international differences in the prevalence rate could be explained by medical factors (e.g. Prevalence of DM and HTN) or by non medical factors (e.g. Non referral to nephrologists)<sup>(7)</sup>. The etiology of ESRD was unknown in our results with 15.7% of the patients, which coincides with that in Iraq (14%), Qatar (14%) and Iran (14.8%)<sup>(15)</sup>. It was less than reported in Egypt (27%)<sup>(16)</sup>, but higher than that reported in the US (3.7%)<sup>(17)</sup>.

This marked difference reflects the late referral of the patients by treating doctors to nephrology centers as well as the patients lack of education about the proper time to seek medical advice. Late referral to nephrologist is associated with increasing the risk of death<sup>(18)</sup>.

In the current study, the surprising and alarming result was that ESRD affecting the young population with mean age of 36.4± 17.7, especially when compared to that reported in the USA (60 years)<sup>(19)</sup>, or that reported in France (70.4 years)<sup>(20)</sup>. This marked increase in mean age in patients from these countries may reflect the improvement in ESRD care, while in our country the disease is affecting young people at their productive period of life. Therefore it is important to have future strategy in order to reduce morbidity and to save resources.

In our study, the prevalence of ESRD was higher in the male group than in female group (55.7% vs. 44.3%, respectively), which was observed in other countries too<sup>(16,21-24)</sup>.

In this study DM (28.5%), HTN (17.1%) were the most common causes of ESRD followed by Glomerulonephritis (14.3%) and chronic pyelonephritis (8.6%). DM and HTN also reported as the commonest causes of ESRD in USA, where DM constitutes 44.4% of the causes of ESRD followed by HTN in 26.6 %<sup>(25)</sup>. This could be due to steady increase in the prevalence of diabetes<sup>(26)</sup> and hypertension<sup>(27)</sup> in general population. Diabetic nephropathy was the most frequent cause among new ESRD patients in Qatar (48%)<sup>(28)</sup>, while hypertension was the commonest cause of ESRD in Egypt (20%)<sup>(13)</sup> and in Iran (30.5%)<sup>(29)</sup>. We also found out that 4.28% of ESRD was because of obstructive uropathy which is not far from what was reported in Qatar (5%)<sup>(28)</sup> and in Aleppo-Syria (6%)<sup>(30)</sup>, but less than that reported in Iraq (17.3%)<sup>(15)</sup>.

Drug nephrotoxicity was seen in 5.7%, while in the US was only 0.2 %<sup>(17)</sup>, which reflects poor education

regarding the hazard of excessive use of analgesics in our locality. The prevalence of Glomerular disease as a cause of ESRD in this study (14.28%) was higher than the result from Qatar (13%)<sup>(28)</sup>, the USA (9.9%)<sup>(25)</sup> and the KSA (9.9%)<sup>(31)</sup>. Such high result need more evaluation, it could be overestimated because of the suggestive presentation of chronic glomerular disease or biopsy proven cases which included in this study. However biopsy is not practiced in our hospital.

Among other causes of ESRD, Pyelonephritis occurred in 8.57% which is higher than the prevalence reported in Iran (4.6%)<sup>(32)</sup> and Iraq (4.7%)<sup>(15)</sup>, which may reflect high prevalence of infections.

## CONCLUSION

In conclusion, this study found out that ESRD is affecting young people and the two most important leading causes of ESRD were Diabetes and Hypertension. This disease is threatening our health system that should stimulate further action to control its progression by efforts to improve early nephrological referral of renal patient, aggressive approaches to control blood glucose and blood pressure, and also by implementation of effective Reno-protective strategies. However, those patients with undetermined causes were high in this result, which reflects some diagnostic limitations.

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