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Epidemiology of chronic renal failure in Al-Ramadi teaching hospital

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Abstract
Background: chronic kidney disease means lasting damage to the kidney that can get worse over time. Chronic kidney disease is more prevalent in the elderly population, however younger population show progressive loss of kidney function. It's widespread and often goes undiagnosed until the disease is well advanced.
Objectives: To determine the epidemiology, aetiological factors, outcomes among patients with chronic renal failure.
Methods: A retrospective study was performed on patients with chronic renal failure admitted to Al-Ramadi Teaching Hospital, during the period between January1 to December 31, 2008. A total of 250 patients 127 male and 123 female who was admitted to the medical floor and the haemodialysis unit, constituted the study group.
Results: There were (50.8%) males patients and (49.2%) females patients. The mean age of the study patients was (47.58) years. The most frequent age group was (46-60) years with frequency of (29.6%). The prevalence of various causes of chronic renal failure in this study was: diabetes mellitus: (30.8%), hypertension: (23.2%), obstructive uropathy: (16.4%), glomerulonephritis: (4.8%), adult polycystic kidney diseases: (4%), interstitial nephritis (drug induced): (3.2%), pyelonephritis: (2.8%), multiple myeloma: (0.8%) and unknown causes: (14%) of the patients.
Conclusions: The incidence of chronic renal failure is high in Al-Anbar province. Occurrence of the disease in urban population more than in rural one. Case _fatality rate was high in our governorate. A cardiovascular disease was the leading causes of death fallowed by cerebrovascular accidents.

Keywords: chronic renal failure, haemodialysis

Introduction
Chronic renal failure (CRF) is a worldwide public health problem with an increasing incidence and prevalence, poor out come and high cost [1]. CRF defined as a persistent and irreversibly low glomerular filtration rate (GFR) below 30-40 ml/minute, regardless of the need for dialysis with a serum creatinine concentration always >2.5 mg/dl [2].
Accompanied by hypertension (HT), susceptibility to infection and generalized deterioration in organ function [3]. While the end stage renal disease (ESRD) is the irreversible deterioration of renal function to a degree that it is incompatible with life without renal replacement therapy (RRT) either by dialysis or transplantation this is usually when the (GFR) fall to 15 ml/min [4]. Precise diagnosis of the causes is mainly of importance in identifying and treating reversible causes. It also helps in assessing prognosis and planning for RRT and in counselling families in which familial conditions, such as adult polycystic kidney disease (APKD), vesico-ureteric reflex or alport´s syndrome occur to prevent ERSD [4]. Renal biopsy is the most specific tool to reach a definitive diagnosis. If it is not performed, diagnosis is mainly based on present, past and family history, serology, examination of the urine sediment and renal ultrasound [5].
CRF will usually happen in stages and not all at once. In the earliest stages, there will hardly be any symptoms that are noticed, as it continues to progress symptoms will slowly appear [6]. CRF increases cardiovascular mortality and morbidity, patient disability and medicare cost [7]. In developing countries the prevalence of CRF is higher than was widely believed particularly in tropical areas and in young individuals. Socio-economic and local environmental factors determine the pattern of disease. Secondary glomerular diseases related to infection are common, as post streptococcal glomerulonephritis [4]. In endemic areas schistosoma hematobium may cause obstructive uropathy and S.mansoni cause mesangiocapillary glomerulopathy. Plasmodium malariae and hepatitis B may cause membranous and membrano proliferative glomerulonephritis (GN) that progress to CRF. Amyloidosis secondary to various chronic infections (tuberculosis) is another common cause and human immune deficiency virus (HIV) nephropathy is a growing problem [9]. Incidence of CRF could be reduced by improved economic conditions and eradication of endemic infection. Since dialysis unaffordable for all patients survival depends on early transplantation which is expensive but effective treatment 4).
Reversible factors in CRF includes hypertension, urinary tract obstruction, urinary tract infection, sepsis, nephrotoxic medications, contrast media, reduced renal perfusion in (renal artery stenosis, sodium and water depletion and poor cardiac function) [10].

Aim of Study
To determine the epidemiology, causes and outcomes of chronic renal failure patients in Al-Anbar province.

Materials and Methods
This is a retrospective study was performed on patients with CRF admitted to the medical floor and haemodialysis unit in Al-Ramadi teaching hospital during the period between

January 1 to December 31, 2008. A total of (250) patients 127 (50.8%) males and 123 (49.2%) females who were admitted the hospital constituted the study group.

Data were collected from follow up sheets of all patients, regarding age, sex, residence, risk factor, co-morbid disease, family history of CRF and all available investigations(renal function test, renal ultrasound, general urine examination and haemoglobin) done to the patients during admission were analysed to detect any underlying risk factor that might lead to the CRF.For statistical analysis SPSS test version 11 and the chi-square test was used to analysis the group's percentage in addition to statistical figures. A p-value < 0.05 was considered to be significant and a p-value > 0.05 considered to be not significant.

Results

Among the 250 patients studied 127 of them were males and 123 were females and the male to female ratio was found to be 1.03:1.p -value was not significant. In this study diabetes mellitus (DM) and hypertension (HT) were noticed in a higher percentage among patients in both sexes. P-value>0.05 as shown in table.1.

Table 1: distribution of precise risk factors according to the sex.

Risk Factors	Male	%	Female	%	Total No.	Frequency
Diabetes Mellitus	33	42.9	44	57.1	77	30.8%
Hypertension	29	50	29	50	58	23.2%
Obstructive Uropathy	29	70.7	12	29.3	41	16.4%
Glomerulonephritis	6	50	6	50	12	4.8%
APKD	4	40	6	60	10	4%
Interstitial Nephritis	1	12.5	7	87.5	8	3.2%
Pyelonephritis	1	14.3	6	85.7	7	2.8%
Multiple Myeloma	1	50	1	50	2	0.8%
Unknown	23	65.7	12	34.3	35	14%
Total No.	127	50.8	123	49.2	250	100 %

No significant differences between sexes. Chi-square not significant (p-value>0.05)

Table.2 shows the distributions of CRF patients according to the risk factors, some of them with one risk factors, others with two or three and we have patients with unknown risk factors.

Table 2: distribution of CRF cases according to the risk factors.

No. of risk Factors	Male	%	Female	%	Total No	Frequency
One	68	48.2	73	51.8	141	56.4%
More than one	36	48.7	38	51.3	74	29.6%
Unknown	23	65.7	12	34.3	35	14%
Total No	127	50.8	123	49.2	250	100%

With respect to the distribution of risk factors according to age group, the most frequent age group was (46-60)years with frequency(29.6%).The mean age and the standard deviation was found to be(47.58+/-19.4) years, as shown in table 3.

Table 3: frequency and distribution of risk factors according to age group.

Age group /years	D.M	HT	OU	GN	APKD	IN	PN	MM	Un.K	Total No.	Frequency
0-15	1 (1.3)	1 (1.8)	2 (4.9)	0	1 (10)	0	1 (14.2)	0	8 (22.8)	14	5.6 %
16-30	4 (5.2)	12 (20.7)	5 (12.2)	4 (33.3)	4 (40)	2 (25)	2 (28.6)	0	15 (42.8)	48	19.2 %
31-45	8 (10.4)	8 (13.8)	11 (26.9)	1 (8.4)	4 (40)	4 (50)	2 (28.6)	0	9 (25.8)	47	18.8 %
46-60	38 (49.3)	21 (36.2)	6 (14.6)	4 (33.3)	1 (10)	1 (12.5)	1 (14.2)	0	2 (5.7)	74	29.6%
61-75	21 (27.3)	13 (22.4)	16 (39)	3 (25)	0	1 (12.5)	0	2 (100)	1 (2.9)	57	22.8%
76-90	5 (6.5)	3 (5.1)	1 (2.4)	0	0	0	1 (14.2)	0	0	10	4 %
Total No.	77	58	41	12	10	8	7	2	35	250	100%

The distribution of death cases with respect to risk factors show that (67) patients from the total (250) patients was died, with a case fatality rate of (26.8%). Most death cases occurs in patients with DM and HT as shown in table.4. P-va lue also not significant here.

Table 4: distribution of death cases according to the risk factors.

Risk Factor	Male	Female	Total No.	% of case fatality rate
Diabetes Mellitus	9	14	23	29.8
Hypertension	8	8	16	27.5
Obstructive uropathy	8	4	12	29.2
Glomerulonephritis	0	4	4	33.3
Pyelonephritis	0	3	3	42.8
APKD	2	0	2	2
Unknown	6	1	7	2
Total No.	33	34	67	

Chi-square not significant (P-value > 0.05).No significant difference between sexes.

Table. 5. shows that most cases in the current study were from al_ramadi and al_ falluja, here high prevalence rate observed. The prevalence of CRF in our province was (153) patients per million population (PMP).

Table 5: distributions of CRF cases according to the residence (11, 12).

District	Number	Population Size	Prevalence/ 10000
AL-Ramadi	123	600 000	2.05
AL-Falluja	73	550 000	1.32
Hit	17	130 000	1.3
AL-Qaim	14	175 000	0.8
Haditha	12	105 000	1.14
AL-Rutba	6	30 000	2
Ana	3	25 000	1.2
Rawa	2	18 000	1.11
Total No.	250	1 633 000	1.53

With respect to the admission rate of CRF patients to al-ramadi teaching hospital. The percentage was high especially during the second half of 2008. CRF patients found daily in the medical floor and the hemodialysis units, patient with repeated admission consider as one case, as shown in table 6.

Table 6: distribution of CRF cases according to the admission rate.

Month	Hospital	Medical Floor	CRF No.	%
January	1159	236	11	4.4
February	1222	270	14	5.6
March	1503	295	18	7.2
April	2206	299	15	6
May	1761	352	15	6
June	2156	281	19	7.6
July	2084	238	27	10.8
August	1880	299	23	9.2
September	2047	210	21	8.4
October	1710	302	26	10.4
November	1818	368	28	11.2
December	1874	354	33	13.2
Total No.	21420	3504	250	100%

Discussion

The prevalence of CRF in our province was (153) pmp as shown in table 5. While the prevalence of ESRD in Egypt was (225) pmp [8], in USA was (107) pmp and in Japan was (66) pmp [13]. These differences in prevalence rate is attributed to many factors, higher rate may correlates with gross national product, while in developing countries may related to its local environment. We should not forget that unknown number of CRF patients admitted in other hospital of the country or outside Iraq.

In this study, diabetic and hypertensive nephropathies account for the majority of CRF cases seen in 30.8% and 23.2% respectively. This is compatible with other studies, as the leading cause and most prevalent risk factors in United State of America (USA) was (DM-46%) and (HT- 26%) [4], in Iran (DM -26.8%) and (HT -13.5%) [7], in united Kingdom (UK) (DM -18%) and (HT -5.5%) [4], and in Egypt (DM -8.9%) and (HT -28%) [3]. Which are mostly due to high prevalence of both diseases in our population associated probably with bad control of these diseases and natural history of diseases.

For obstructive uropathy it was (16.4%) which is higher than other studies; in Iran (12%) (7), in Egypt (9.3%) (3).which are related to high cases of benign prostatic hyperplasia and different renal stones in our patients.

Regarding Glomerulonephritis in this study was (4.8%) while in china (45.3%) was the primary cause specially (Ig-A) nephropathy (1), in Egypt (16.6%) (3), (in USA -14%) [4], in (UK -10%) (4) And in Iran (6.5%) (7). the low incidence of GN is due to poor diagnostic facility, mainly renal biopsy.

These cases diagnosed as GN indirectly because underlying disease was systemic lupus in all female cases.

The unknown causes was (14%) most of them below 30 years old 23 form 35 patients (65.7%) which are lower than in Iran (29.5%) [7], UK (23%) [4] And in Egypt (16.2%) [3] But higher than in USA (4.5%) [4], its duo to poor diagnostic facility, especially renal biopsy.

The current study showed no big difference between male and female regarding the incidence, as shown in table.1. While the predominance of male gender has been established by all investigators, in Iran (61% male) and (39% female) [7] and in Egypt (64.2%male) and (35.8% female) [8]. High number of female included in this study partly due to the structure of our population were higher number of female are present [11].

There is no significant association between the sex of the patients and the risk factors except in obstructive uropathy, interstitial nephritis and pyelonephritis as shown in table.1.This study showed that 141 patients have one risk factors (56.4%) while 74 patients have more than one risk factors (29.6%) and 35 patients have unknown risk factors (14%) as shown in table 2. Therefore, having more than one risk factors may increase the progression to word the ESRD.

Most cases were between age (46-60) years in (29.6%) as shown in table.3 which is lower than and not coincide with other studies; in Iran (61-70) years (7), USA (66-74) years and UK (65-80) years(4), but similar to that in Egypt (45-59) years(3). The mean age of the study patients was (47.58+/-19.4) years while in Iran (51.6+/- 17) years (7). And in Egypt (45.6+/-14.2) years (8). This is due to low survival rate in our community, compared with others. The case fatality rate was (26.8%) which is considered to be high compared to other studies in Egypt (11.7%) (8) And in USA (7.8%) (4). This high death rate is attributed to late referral for treatment accompanied by delayed diagnosis limitation prevailing in our governorate, and less frequent (insufficient) dialysis in presence of only one dialysis unit, also no association was found between the sex and the death cases in this study as shown in table.4.

The study show the occurrence of CRF in urban population was more than in rural one; 148 patients from urban area (59.2%) compared to 102 patients from rural area (40.2%). Which is agreement with other studies. Probably due to high prevalence of DM and HT in our population and life style of urban area.

104 from our patients have co-morbid diseases (41.6%). including ischemic heart disease (32.7%), cerbro vascular accident (19.2%), malignancy (6%), heart failure, chronic obstructive pulmonary disease and others. Which are related to high incidence of DM, HT, tuberculosis, hyperlipidemia, ischemic heart disease and their complications.

14 patients have family history of CRF, 10 of them have APDK.

The percentage of CRF patients admitted during 2008 to the medical floor was (7.13%) and its percentage to the total admission in al-ramadi teaching hospital was (1.13%). The percentage of medical floor admission compared with the

total hospital admission was (16.3%) as shown in table.6. In this study we found that admission rate during the first half of 2008 was 86 patients (34.4%) compared to 84 patients (33.6%) during the second half that cannot be explained.

Conclusion

The incidence of CRF is high in Al-Anbar province. Occurrence of CRF in urban population more than in rural one. Case _fatality rate was high in our governorate. A cardiovascular disease was the leading causes of death fallowed by cerebrovascular accidents.

Recommendation

Population with risk factor should be screened thoroughly and followed ¬_up periodically with appropriate tests. The renal function in patient with CRF may be restore by identification and correction of any reversible risk factor. Methods used to slow progression includes: control of diet, DM, HT, hyperlipidemia and avoidance of nephrotoxins, smoking cessation and use of ACE inhibitors or ACE receptor blockers. There is a need to establish a massive prevention program to reduce incidence of CRF by provide health education and consultation of CRF patients and establish a program for cadaveric renal transplantation. There is an urgent need for another haemodialysis unit in our governorate with special medical teams, although building of a nephrology center remains the best option.

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