

Etiology and outcome of peritoneal dialysis in 100 patients with chronic renal failure in Al-Ramadi Teaching

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Abstract

Chronic renal failure is fatal disease because it leads to failure of excretory, metabolic and endocrine functions of the kidneys which lead to disturb all physiological functions of the body some of these derangements is fatal to human beings to save human these body disturbances by chronic renal failure is treated by renal transplant and dialysis in different ways including peritoneal dialysis (PD.). Chronic renal failure is a common disease in patients attending Ramadi teaching hospital whom treated by peritoneal dialysis (PD) with variable results. So this study is introduced to detect the health status for managing chronic renal failure treated by peritoneal dialysis. All patients were 100 patients (53 male and 47 female) with CRF who admitted to the medical ward in Al-Ramadi teaching hospital during a period from November 2008 till July 2009. Thorough history, examination and investigations were done for them including: hemoglobin, ESR, blood urea, serum creatinine, ECG and abdominal U/S then PD was done for them according to their indications. The study showed that male was 53% with the age between 13 and 87 years while the female was 47% with the age between 12 and 91 years. Diabetes mellitus (DM) and hypertension (HT) were the most common cause of CRF. The outcome was: 30% complete improvement, 21% partial improvement, 26% less responsive and 23% died. In the last months of my study there was significant improvement. In conclusion; DM and HT were the most common causes of CRF respectively; however obstructive uropathy had a notable ratio. There was no significant difference regarding sex. The outcome of PD was poor early in my study with significant improvements later.

Keywords: Chronic renal failure; Endocrine functions of the kidneys; Peritoneal dialysis (PD.)

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Introduction

Chronic renal failure (CRF) it is either renal damage or decrease in glomerular filtration rate (GFR) < 60 ml/min/1.73 m² for ≥ 3 months. Renal damage defined as pathologic abnormalities

or markers of damage, include abnormal results in blood tests, urine studies or imaging results [1]. The causes of chronic renal failure are: diabetes mellitus (DM) 42.9%, hypertension (HT) with large vessel disease 26.4%, glomerulonephritis (GN) 9.9%, interstitial nephritis 4%, cystic with hereditary and congenital kidney disease 3.1%, vasculitis 2.4%, miscellaneous conditions 3.8% and unknown cause 7.5% [3]. National kidney foundation has defined the stages of chronic kidney disease (CKD) are:

Stage 1: Renal impairments with normal or increase GFR (90-120) ml/min/1.73m².

Stage 2: Renal impairments with GFR of (60-89) ml/min/1.73m².

Stage 3: when GFR of (30-59) ml/min/1.73m².

Stage 4: when GFR (15-29) ml/min/1.73m².

Stage 5: when GFR < 15 ml/min/1.73m² or it need dialysis [1].

The first points in managing any patient with an increase level of creatinine and/or blood urea nitrogen (BUN) are to detect is the results are a true decrease in GFR or not, is it acute or chronic, What the cause, is there a reversible cause, and finally attempts to prevent further renal damage [4].

End stage renal failure is fatal disease one of its treatment modality is by peritoneal dialysis (PD.) The indications for PD. include: hyperkalemia, hyponatremia, metabolic acidosis, fluid overload and pulmonary edema especially in oligo/anuric patients who are not respond to diuretics, however uraemic pericarditis and uraemic encephalopathy are a strong indication for dialysis [2]. A plan for type of renal replacement therapy (RRT) should be discussed with the patient at the beginning of management of renal failure and before the appearance of uraemic symptoms. Approximately 100 000 patients in the USA.

we're initiating on RRT: 92% began hemodialysis (HD), 6% began peritoneal dialysis (PD) and 2% underwent renal transplantation as their first modality of RRT [3]. In UK PD has now become an established form of RRT, 70% began on HD and 30% on PD. The life expectancy of patients now is similar to that of HD [5]. As a result there are 10-20% of PD. patients on are shifted annually to hemodialysis for many factors, less numbers of patients changes their management from HD to PD, mainly due to vascular causes, heart diseases or patient desire [6], short period acute PD or for long period (chronic PD), acute PD period usually 24-72 hr. Chronic PD of two types: continuous ambulatory peritoneal dialysis (CAPD) and automated peritoneal dialysis (APD) which includes cyclic PD (CPD) , intermittent PD (IPD) and nightly intermittent PD (NIPD) [7]. Complications of PD include: bleeding, perforation of abdominal organs, infections (peritonitis, infection of catheter pathway), leakage of the catheter, hyperglycemia and malnutrition of protein. Peritonitis treatment with intra-

peritoneal antibiotics, or removal of the catheter which is highly indicated in cases of bacterial peritonitis that is not responding to antibiotics and fungal peritonitis [4].

The contraindications of PD includes: abdominal surgeries, bowel adhesions, colostomy, large or complicated hernias, bowel ischemia or inflammatory bowel disease, diverticulitis, abdominal cysts including polycystic kidney, unstable lung disease, morbid obesity, sciatica and noncompliance.

The results of PD depends on:

1. Human body factors: age, comorbidity, size of the body and state of the peritoneal membrane.
2. Non-medical factors: compliance adherence, social support and socioeconomic status [8]. The characteristics of an adequate PD include: good hygiene of the patient, good nutritional status, acceptable hemoglobin level, good cardiac function, normal blood pressure, well controlled body fluid, controlled level of serum bicarbonate level, potassium, phosphate and calcium with better control of hyperparathyroidism [9]. Essentially, being young with less comorbidity, especially diabetes, is associated with better outcome in PD, than older and diabetic, the reverse tends to be true [10]. Where patients with ischemic heart diseases or heart failure had bad outcomes of PD [11].

Material and methods

This is a prospective study were done at the medical department of AL-Ramadi Teaching Hospital during the period between November 2008 till July 2009, 100 patients (53 males and 47 females) with ESRD were included in this study. Full history was taken from the patients or from their relatives regarding: age, family history, risk factor, time of diagnosis of CRF and history of previous RRT. Proper examination was done for them and assessment for the indication of PD. Investigations were done for the patients which included: hemoglobin, ESR, Blood Urea (BU), Serum Creatinine (SC), ECG and abdominal U/S to prove the diagnosis and to assess the severity and the complications of CRF. The selection, indication and outcome of patients for PD was done according to clinical and laboratory parameters (7). The method for PD includes catheter, solutions (A, B and C), follow up of patients was done during 3 days' session of PD and the outcome (good, partial and no response) according to clinical and laboratory improvements. For statistical analysis the chi-square test was used to analyze the group's percentage in addition to statistical chart. A p-value <0.05 was considered to be significant and a p-value >0.05 considered to be not significant.

Results

Table 1.

Mean age, sex of patients with CRF.

SEX	No.	%	Mean	SD	P-Value
Male	53	53	54.32	14.29	> 0.05
Female	47	47	48.83	19.97	> 0.05

P-Value > 0.05 not significant

Table 2.

Distribution of patients according to outcome of PD. Per month

Time month	Complete response		partial response		No response		Death		Total
	No.	%	No.	%	No.	%	No.	%	
Nov.-Dec. 2008	6	20	9	42.9	17	65.4	15	65.2	47
Jan.-Mar. 2009	8	20.7	9	42.9	8	30.8	8	30.4	32
Apr.- Jul. 2009	16	53.3	3	14.2	1	3.8	1	4.4	21
Total	30	100	21	100	26	100	23	100	100

Chi – Square

$X^2 = 15.5$ at degree of freedom (d. f.) = 3

P- Value < 0.05 (Significant).

Case fatality rate= $23/100 \times 100 = 23\%$

Table 3: Frequency and percentage of presumed causes of CRF.

Causes	Male		Female		Total	
	No.	%	No.	%	No.	%
Diabetes Mellitus	20	56.6	16	43.4	36	36
Hypertension	16	64	9	36	25	25
Obstructive uropathy	2	28.6	5	71.4	7	7
Glomerulonephritis	2	40	3	60	5	5
Polycystic kidney disease	3	60	2	40	5	5
Chronic pyelonephritis	3	60	2	40	5	5
Nephrotic syndrome	1	25	3	75	4	4
Interstitial Nephritis	2	50	2	50	4	4
Alport syndrome	0	0	1	100	1	1
Multiple myeloma	1	100	0	0	1	1
Unknown cause	3	42.9	4	57.1	7	7
Total	53	53	47	47	100	100

Chi-square :

$X^2 = 4.1$

P- value < 0.05 (significant associations between sex and causes).

Table 4.

Distribution of patients with CRF according to outcome of PD.

Outcome	Male		Female		Total	
	No.	%	No.	%	No.	%
Complete response	17	55	13	45	30	30
Partial response	12	57	9	43	21	21
No response	14	54	12	46	26	26
Death	11	46	12	54	23	23
Total	53	53	47	47	100	100

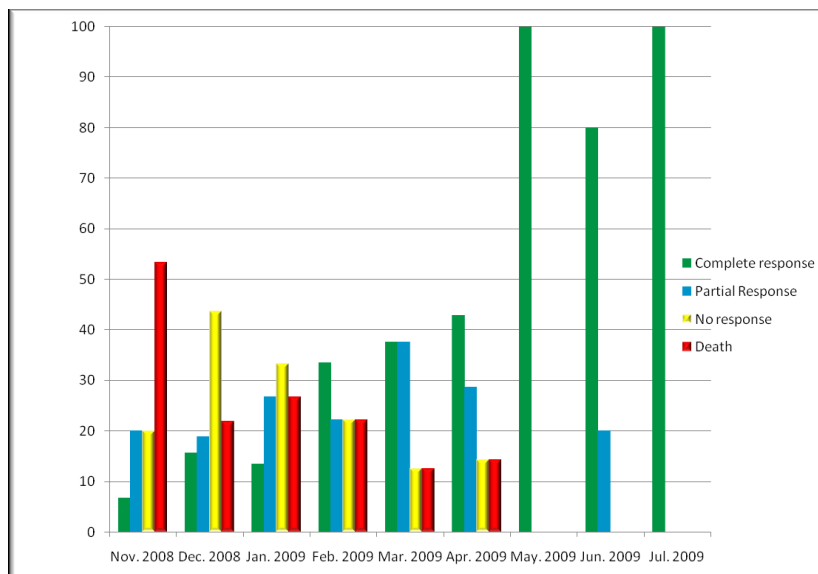
Chi – Square
 $X^2 = 2.1$
P- Value > 0.05 (Non-significant).

Table 5.

Frequency of CRF according to age and sex

Age	Male No.	Male %	Female No.	Female %	Total No.	Total %
10-20	2	4	10	21	12	12
21-0	1	2	0	0	1	1
1-40	7	1	5	11	12	12
41-50	9	17	8	17	17	17
51-60	1	25	12	25	25	25
61-70	18		7	15	25	25
71-80		7	2	4	5	5
81-90	0	0		7		
Total	5	100	47	100	100	100

Chi – Square
 $X^2 = 2.8$
P- Value < 0.05 (significant)

**Figure 1.**

Percentage of patients with CRF according to outcome of PD and Months.

Discussion

In this study which included 100 patients with CRF underwent PD (53% males and 47% females) with a mean age of 52 ± 16 years' standard deviation, this was agreed with Srinivasan et al in Korea [12]. The most common age groups affected in our study were the 6th and 7th decades for both male and female respectively, this explainable by late complications of DM and HT. The most common causes of CRF in this study were DM (36%), this was agreed with Seung H in Korea [13] and in USA was (46%) which was disagreed because they have early screening techniques to diagnose DM, In UK (18%) [15] which was also disagreed because of high life style and early management for pre-diabetic patients. For HT in our study was (25%) this was agreed with Seung H in Korea [13] which was (26%) and also agreed in USA which was (26%) while disagreed with UK which was (5.5%) [15] this difference may be because decreased salt diet and sedentary life style. For obstructive uropathy constituted (7%) of causes, these results were slightly less than Afifi A and Karim M in Egypt who had (9.3 %) [14] but in Iran was (12%) [16] which was disagreed because of high incidence of infection and renal stone in Iran. Regarding glomerular nephritis, in our study was (5%) while in USA (14%) and in UK (10%) [15], this disagree may be due to early diagnostic techniques including renal biopsy in these countries. For unknown causes, in our study was (7%) while in USA (4.5%) [15] that is because of highly advanced techniques in this country, while in Egypt (16.2%) [14] this disagree may be due to poor techniques for early diagnosis of CRF in Egypt. The outcome of PD in this study was complete response (30%), partial response (21%), no response (26%) and death (23%) respectively depending on the clinical laboratory outcome ,the explanation for these poor results especially in the early months were explainable by advanced age, co-morbidity, poor technique, lack of facilities, late presentation and intervention and finally noncompliance, this was improved in the last months of our study because of improvement regarding early decision for PD, availability of equipment, better follow up and compliance. There was satisfactory significant improvement in the outcome of PD in late months of our study compared with early months. These results can't be compared with any other study because there is no similar study (3-day session PD). From this study we recommend

1. Trial for availability of well-equipped PD unit in AL-Ramadi Teaching Hospital, with well-trained medical staff.
2. Medical education for the medical staff and sub staff.
3. Trial for large multi centers study regarding the causes of CRF in Al- Anbar governorate.

Limitation

Some data might have been missed, some time we have difficulties in investigations due to unavailability in general hospital due to reduce infrastructure in the country after many wars.

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Ethical Approval

The study was approved by the Ethical Committee.

Conflicts of Interest

The authors declare that they have no competing interests.

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