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Frequency, Prognosis and Risk Factors of Congestive Heart Failure in Dialysis Patients Attending Public Hospitals in Pakistan

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Abstract

Introduction: Congestive Heart Failure (CHF) in patients with dialysis is a concern increasing morbidity and mortality. Research was conducted to evaluate CHF in dialysis patients; it`s frequency and prognosis among patients attending public healthcare institutions in Pakistan. Methods: This was a multicenter cohort study whereby data of 117 patients for one year was evaluated retrospectively. Results: All patients had End-Stage Renal Disease (ESRD) and were on regular maintenance hemodialysis therapy. 7.7 % patients had Non-Insulin Dependent Diabetes Mellitus, 4.3% had Ischemic Heart Disease, 78.6% had Left Ventricular Hypertrophy and 80.34% had Cardiomyopathy. 38.5% were confirmed with CHF. 31.6% had systolic dysfunction, 6.8% had diastolic dysfunction and 3.4% had both systolic and diastolic dysfunction. Among patients with systolic dysfunction, 2.6% measured Left Ejection Ventricle Fraction (LEVF) of ≤ 20%, 13.7% measured 21-30% and 15.4% measured 3-40%. Additionally, 28.9% developed de novo CHF. Recurrence of CHF was observed in 57.7% and mortality rate was 24% in CHF group. Conclusion: Incidence of CHF was relatively high in these patients. Frequent recurrence of the disease, re-hospitalization and enhanced mortality is evident of adverse prognosis of CHF in ESRD patients. CVD must not be considered separately in ESRD patients. Appropriate management and correction of risk factors of co-morbid conditions can be helpful in improving the disease condition..

Key words: Congestive heart failure, Dialysis, End stage renal disease, Pakistan.

INTRODUCTION

Heart Failure (HF) is defined as a complex clinical syndrome that can result from any structural or functional cardiac disorder that impairs the ability of the ventricle to fill or eject blood,[1] with diagnosis relying on clinical examination and associated with significant mortality, morbidity and expenditure.[1] Congestive heart failure (CHF) is a cardiovascular complication in which the heart becomes unable to supply a sufficient amount of blood to meet the metabolic requirements and fulfill the body's oxygen demand[2] and is increasingly seen as a major public health problem. Harnett *et al.* identified older age, anemia, hypoalbuminemia, high diastolic blood pressure and systolic dysfunction as variables resulting in CHF.[3] Other factors which play an important role in the worsening of CHF may result from Hypertension (HTN), Acute Renal Failure (ARF), Chronic Renal Disease (CKD) and End Stage Renal Disease (ESRD) in dialysis recipients.[4]

Chronic Kidney Disease (CKD) is a key contributor to severe cardiac damage and equally CHF is a key cause of advancement of CKD. Several factors and circumstances more specific to dialysis patients may contribute to the risk of sudden cardiac death.[5] The cardio-renal syndrome is complex as HF and kidney disease share common risk factors and potentiate each other and other cardiovascular diseases.[6]

CHF is an independent risk factor for early mortality in ESRD patients. In the ESRD population, Hemodialysis (HD) also contributes itself to the development of CHF with sustained fluid overload a major cause of hypertension, heart failure and mortality in patients with ESRD.[7] There is increasing concern that the incidence of CHF is growing in both the general and ESRD populations.[2] It is extremely prevalent among patients on renal replacement therapy (dialysis) and is a significant predictor of death.[8] The development of CHF at the initiation of ESRD is an independent prognostic indicator of death,[3] with CHF patients often failing to respond to CHF treatment and advance to end stage CHF. This results in appreciable hospitalizations, reduced quality of life and progressive CKD.[9] CHF in ESRD patients is a considerable health care problem especially in developing

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countries.[10]

Compared with the general population, dialysis patients have a 10 to 20 times greater incidence of cardiovascular death.[11] The incidence of HF in dialysis patients is estimated at 71 events/1,000 patient years.[12,13] However, few studies have examined ESRD outcomes in Asian or Pacific Islander subgroups.[14] It appears that Indians have a higher prevalence of hypertension and diabetes as cardiovascular risk factors associated with CHF.[15] CKD is also rapidly growing in Pakistan due to increased prevalence of diabetes, HTN and nephrolithiasis.[16] However, there is scarcity of information on patients with concomitant CHF and ESRD from Pakistan to guide future treatment strategies. Consequently, the current research was conducted to evaluate the incidence of CHF in dialysis patients, prognosis and risk factors among patients attending public healthcare institutes in Pakistan. Subsequently, use this information to suggest ways of improving the care of these patients, which could be monitored in future studies.

MATERIALS AND METHODS

Study settings

A one-year multicenter cohort study was undertaken in two public healthcare centers in Pakistan, namely Sandeman Provincial Hospital Quetta (SPHQ) and Balochistan Institute of Nephro-Urology Quetta (BINUQ) in Quetta city.

Sandeman Provincial Hospital Quetta (SPHQ)

SPHQ is 825 bedded tertiary care teaching hospitals, with the hospital treating patients throughout the province. The hospital also contains a 20 bedded Nephrology Department along with a 16 bedded well equipped hemodialysis units. In this unit, hemodialysis is conducted in four shifts. Emergency hemodialysis is also performed late at night and holidays when required.

Balochistan Institute of Nephro-Urology Quetta (BINUQ)

BINUQ was established in November 2006 for kidney related diseases. It is a well-equipped institute with all modern treatment facilities, providing care for patients in the field of urology and nephrology. A twelve bedded well equipped hemodialysis unit provides services in three shifts and an extension program of hemodialysis unit is almost near completion. This added program will enable the institute to become a 40 bedded hemodialysis unit to facilitate the increasing number of hemodialysis patients.

Study design and sampling

The study was undertaken from October 2017 to September 2018. All patients that were registered during this time period were evaluated. Overall 174 patients, 117 patients of both genders [males - 48.7% and females - 51.3%] were included in the study. All patients had ESRD and were on regular maintenance hemodialysis therapy. 57 patients were enrolled from SPHQ and 60 from BINUQ.

Inclusion criteria

Patients' who were clinically established for ESRD, on regular maintenance hemodialysis for at least six months and receiving hemodialysis therapy at the same center, were included in the study. Patients not established for ESRD, patients on maintenance hemodialysis for less than six months, those who left for other centers or discontinued therapy during the study period, were excluded. Additionally, patients with severe mental disorder and who died within three months of initiation of study were also excluded. Therefore, 57 patients were excluded based on the inclusion criteria.

Data collection process

A data collection form was designed and approved by the research team. This included two physicians practicing at BINUQ, with their expertise were taken into consideration. The data collection form was piloted with 10 record files that were taken from SPHQ. The data collection form was subsequently discussed with the nephrologist for appropriateness and validity of related issues. The form was subsequently refined, although limited modifications were needed in practice. The amended data collection form was used for actual data collection.

The research tool contained relevant information regarding the demographics and disease characteristics of the patients such as their age, gender, systolic and diastolic blood pressure, dialysis access, frequency and duration of HD as well as extent of CHF, presence of LV dysfunction (LVD), Ischemic Heart Disease (IHD), left ventricular hypertrophy (the muscle **hypertrophies of the left ventricle;** LVH),[17] diabetes and anemia, as well as biochemical parameters such as serum urea, serum creatinine and serum electrolytes (Na++, K+, Cl,) along with the serology of the patients. Echocardiography was performed by M. Mode 2D Doppler whereby cardiac size, wall thickness, wall structure and functions, congenital anomalies and ischemic wall motion abnormalities were observed. In addition, electrocardiography, chest X-Ray and clinical correlations with the sign and symptoms of CHF were used to confirm the presence of CHF by using the Framingham criteria.[18]

Statistical analysis

SPSS version v 20 was used for statistical analysis. Descriptive statistics were used to describe demographic and disease characteristics of the patients. Percentages and frequencies were used for the categorical variables, while means and standard deviations were calculated for the continuous variables.

Ethical approval

Ethical approval to conduct the study was received from the Institutional Review Board, Faculty of Pharmacy and Health Sciences, University of Balochistan, Pakistan. Additionally, permission to conduct the study was taken from the medical superintendent of the respective institutes

RESULTS

Patient characteristics

The characteristics of the sample are described in Table 1.

Disease related characteristics of the respondents

Table 2 describes the disease characteristics of the patients enrolled. All patients had hypertension, with an appreciable number having LVH and

Table 1: Demographic characteristics of the patients (N = 117).

Characteristics	Frequency	Percent
Institute		
SPHQ	57	48.7%
BINUQ	60	51.3
Age group		
10-20 year	09	7.7%
21-31 year	19	16.2%
32-42 year	24	20.5%
43-53 year	39	33.3%
>53 year	26	22.2%
Gender		
Male	57	48.7%
Female	60	51.3%

Cardiomyopathy (CMP), with just under a third suffering from systolic dysfunction. A minority had Non-insulin Dependent Diabetes Mellitus (NIDDM), Insulin Dependent Diabetes Mellitus (IDDM) or Ischemic Heart Disease (IHD).

Vascular access duration and frequency of HD and sign and symptoms

Nearly all patients were accessed through arterio venous fistula for hemodialysis with only a minority through central venous catheterization (Table 3). The vast majority of the patients had hemodialysis twice a week, with over half of the patients on dialysis for 1-3 years or longer (Table 3). Over half of the patients had shortness of breath (Table 4). Out of all the patients, 36.8% had palpitations, 35.0% had pedal edema, 20.5% had pericardial effusion and 4.3% had ascites.

Risk factors stratification of the study respondents

2.6% patients had Left Ejection Ventricle Fraction (LEVF) ≤ 20% (Table 4), while 13.7% patients had LEVF of 21-30% and 15.4% patients had EF 31-40%. In all patients, sodium levels were more than 100 mmol/l and in over half of patients potassium ranged from 0-5 mmol/l. Almost half of the patients had systolic BP between 141-160 mmHg, with over a third higher

Table 2: Disease related characteristics of the study patients with ESRD.

Characteristics	Frequency	Percentage
End-stage Renal Disease (ESRD) Yes	117	100%
Hypertension (HTN) Yes No	117 0	100% 0%
Non-Insulin Dependent Diabetes mellitus (NIDDM) Yes No	9 108	7.7% 92.3%
Insulin Dependent Diabetes mellitus (IDDM) Yes No	2 115	1.7% 98.3%
Ischemic Heart Disease (IHD) Yes No	5 112	4.3% 95.7%
Left Ventricular Hypertrophy (LVH) Yes No	92 25	78.6% 21.4%
Left Ventricular Dysfunction (LVD) Systolic Dysfunction Diastolic Dysfunction Normal L.V Function	37 8 72	31.6% 6.8% 61.5%
Cardio-myopathy (CMP) Yes No	94 23	80.3% 19.7%

Diastolic dysfunction was assessed through echocardiography. We used the E/A ratio where E >A was taken as normal while E < A reported the presence of diastolic dysfunction (E = early diastolic velocity; A = arterial velocity).

Table 3: Vascular access duration and frequency of HD.

Characteristics	Frequency	Percentage
Duration of Hemodialysis 6 Months 1 Year 1-3 Years 4-6 Years More than 6 Years	 5 46 56 9 1	 4.3% 39.3% 47.9% 7.7% 0.9%
Hemodialysis (Frequency per week) 2/ week 3/ week	 114 03	 97.4% 2.6%
Arterio-Venous Fistula (AVF) Yes No	 110 7	 94% 6%
Central venous Catheterization (CVC) Yes No	 7 110	 6% 94%

Table 4: Risk factors stratification of study respondents.

Risk factor stratification	Frequency	Percent	Normal range
Systolic Blood Pressure Group (SBP) 121-140 mmHg 141-160 mmHg 161-180 mmHg 181-200 mmHg	 17 59 29 12	 14.5% 50.4% 24.8% 10.3%	120 mmHg
Diastolic Blood Pressure Group (DBP) 80 mmHg 85 mmHg 90 mmHg 95 mmHg 100 mmHg 130 mmHg	 54 24 27 2 9 1	 46.2% 20.5% 23.1% 1.7% 7.7% 0.9%	80 mmHg
Urea Group 0 – 100 mg/dl 101 – 200 mg/dl 201 – 300 mg/dl 301 – 400 mg/dl More than 400 mg/dl	 15 77 19 5 1	 12.8% 65.8% 16.2% 4.3% 0.9%	50 mg/dl
Creatinine Group 0 – 5 mg/dl 6 – 10 mg/dl 11 – 15 mg/dl 15 – 20 mg/dl	 20 79 13 5	 17.1% 67.5% 11.1% 4.3%	0-1 mg/dl
Hemoglobin Group (HB) 0 – 5 G/dl 6 – 10 G/dl 11 – 15 G/dl	 2 99 16	 1.7% 84.6% 13.7%	Men: 13.5 to 17.5 G/dl Women: 12.0 to 15.5 G/dl
Sodium Group (mean ± SD)	140.81 ± 5.87mEq/L	N/A	100 mEq/L
Potassium Group 0 – 5 mmol/L 5 – 10 mmol/L	 70 47	 59.8 40.2	3.5-5.0 mmol/L
Calcium Group 1 – 3 mg/dl 4 – 6 mg/dl 7 – 9 mg/dl > 9 mg/dl	 5 42 64 5	 4.3% 35.9% 54.7% 4.3%	10 mg/dl
Left Ejection Ventricle Fraction Group (LEVF) 11 – 20 % 21 – 30 % 31 – 40 % More than 40 %	 3 16 18 80	 2.6% 13.7% 15.4% 68.4%	55 - 70%
Hepatitis – B Group Yes No	 4 113	 3.4% 96.6%	N/A
Hepatitis – C Group Yes No	 13 104	 11.1% 88.9%	N/A

than this (Table 5), with a third having diastolic pressure of BP 90 mmHg or greater. Urea ranged between 101-200 mg/dl in 65.8% patients. In 67.5%, patients' creatinine level ranged from 6-10 mg/dl. In a high proportion of patients, hemoglobin ranged from 6-10 G/dl, with serum calcium ranging from 4-6 mg/dl in over a third and 7-9 mg/dl in over half of the patients. A limited number also had hepatitis-B and hepatitis-C (Table 4).

Among the 117 patients enrolled, CHF was observed in 45 (38.4%) patients. Only 4 (3.4%) patients developed both systolic and diastolic dysfunction as proposed by the ACC/AHA/HFSA Focused Update of the 2013 ACCF/AHA Guideline for the Management of Heart Failure.[1] Out of the reported 45 CHF patients, de-novo CHF was reported in 13 (28.8% of the 45) while recurrence of CHF was observed among 26 (57.7%).There were six patients that reported to have CHF and were on CHF medication. However, they were unable to provide either echocardiography reports or any other documented evidence. The CHF was later confirmed on the basis of echocardiography. No acute case of CHF was reported. Death was reported in eleven patients throughout the study period (Table 5).

Table 5: Prognosis of the patients with ESRD.

Characteristics	Frequency	Percent
Congestive Heart Failure		
Yes	45	38.46%
No	72	61.5%
Systolic plus Diastolic Dysfunction		
Yes	4	3.4%
No	113	96.6%
New (de-novo) Congestive Heart Failure		
Yes	13	28.8%
No	32	71.2%
Recurrence of Congestive Heart Failure		
Yes	26	57.7%
No	19	42.3%
Deaths		
Yes	11	24.4%
No	34	75.6%

DISCUSSION

Incidence of CHF

This percentage of ESRD patients with CHF is high compared to other reported studies. The prevalence of CHF in hemodialysis patients was 9% in the study by Parfrey *et al*.[17] and 31% in the study by Harnett *et al*.[3] Clinical manifestations of CHF were already present in approximately a third of new dialysis patients with this number likely to grow with continuing dialysis. There may be a number of reasons for the high incidence of CHF in the ESRD population in our study. Firstly, since Quetta is the capital city of the province, patients come from rural areas to access healthcare. Secondly, a large number of patients from across the border of Afghanistan also come for treatment. Thirdly, patients in rural areas typically have a poor health care system and have very low economic conditions; consequently, they typically rely initially on home remedies for the treatment of severe diseases before seeking care from healthcare professionals.[18] In such rural areas, mythical and spiritual beliefs typically lead to a worsening of the disease before patients present to specialist centers in urban settings. Herbal treatment is one of the most contentious treatment approaches in such areas, which may be the main reason affecting deterioration of the cardiovascular and renal systems before presentation. Another important factor is the existences of non-qualified practitioners in Pakistan, also contributing to the deterioration of health conditions in such areas before patients seek professional help. Furthermore, the lack of awareness and late referral of patients from general practitioners and physicians to the nephrologists may also lead to a higher incidence of ESRD and CHF, as seen in our study population. These factors will be explored further in future research projects to improve the prognosis of such patients. Such research is ongoing in other chronic disease areas in Pakistan.[18]

Typically, when the patients are referred to nephrologists, they already have progression of kidney disease and most of the time patients come to nephrologists with advanced stage renal disease or even with terminal renal insufficiency. In such circumstances, nephrologists have limited choices of available treatments, with patients advised that renal replacement therapy may be the only option. The suitable choice of renal replacement therapy for nephrologists is to initiate the patient on hemodialysis. Initiation of hemodialysis requires vascular access, with Central Venous Catheterization (CVC) adopted for prompt hemodialysis execution. Meanwhile, an Arterio-Venous Fistula (AVF) is performed surgically, which takes almost three to four weeks in maturation. After this, continuous hemodialysis is executed by means of AVF. AVF is more appropriate for hemodialysis compared to CVC. This is also seen in our study whereby 94% of the patients had vascular access to AVF as compared to CVC (Table 3).

Table 6: Prognosis and de-novo congestive heart failure

Characteristics	Frequency	Percent
Congestive Heart Failure		
Yes	45	38.46%
No	72	61.5%
Systolic plus Diastolic Dysfunction		
Yes	4	3.4%
No	113	96.6%
New (de-novo) Congestive Heart Failure		
Yes	13	28.8%
No	32	71.2%
Recurrence of Congestive Heart Failure		
Yes	26	57.7%
No	19	42.3%
Deaths		
Yes	11	24.4%
No	34	75.6%

Prognosis

In our study population, 78.6% patients had LVH and 31.6% patients had systolic dysfunction, both contributing to poor prognosis. If CHF is accompanied with renal failure, the prognosis is poor. In our study population, just under a third of the patients had left ventricle systolic dysfunction and 8 patients had diastolic dysfunction in the presence of preserved left ventricular Left Ejection Ventricle Fraction (Table 5). Four patients were also found to have both systolic and diastolic dysfunctions (Table 6), with 13 patients (29%) developing de novo CHF. Frequently re-hospitalization was required in 57.7% of patients due to worsening of the cardiovascular conditions and development of CHF (Table 6). In the CHF group, 11 patients died during the study period resulting in 24.4% deaths in this group. These combined factors reflect the poor prognosis of CHF in the ESRD population.

Risk factors

Independent risk factors for the development of de novo HF include age,

anemia, hypertension and hypoalbuminaemia. Consequently, it is wise to work on possible modifiable risk factors through patient education and early detection.

CHF

In our study population, CHF was highly prevalent. This is as concern as CHF is an independent risk factor for premature mortality in the ESRD population.[19] In our study population, diastolic dysfunction, a contributor to cardiac dysfunction, was observed in 6.8% patients having preserved left ventricular Left Ejection Ventricle Fraction (Table 2). Out of 117 patients in our study, 31.6% were diagnosed with systolic dysfunction (Table 2), with 3.4% patients having both systolic and diastolic dysfunction (Table 6). This may have contributed to the high mortality rates seen in our study.

Hypertension

Hypertension is a major cause of cardiac disease in patients with ESRD. In our study, all enrolled patients were hypertensive with elevation of systolic BP, as well as elevated diastolic BP in several patients. This may have been an important contributor to the development of CHF. Overall, systolic BP ranged from 140 mmHg to 200 mmHg and diastolic BP from 80 to more than 100 mmHg (Table 5).

LVH

LVH is an independent and strong risk factor for CV morbidity and mortality in ESRD patients.[2] In our study, LVH was high at 78.6% of patients (Table 2) due to the occurrence of a number of risk factors, which included hypertension, edema and shortness of breath due to fluid over load (Table 4). The lack of awareness of the disease, limited health care availability, late diagnosis and delayed referrals to cardiologists, all contributed to the high occurrence of LVH in our study population, which is a concern.

Anemia

CHF, chronic kidney disease and anemia appear to act together in a vicious circle in which each condition causes or exacerbates each other.[20] In our study, anemia was found to be one of the most prevalent risk factors contributing to increased morbidity and mortality. Out of 117 patients, 16 (13.7%) patients had hemoglobin levels more than 10 g/dl (Table 5). Overall, all patients in our study were anemic, which reflects the contribution to LVH (Table 2) and CHF (Tables 5 and 6). 99 patients (84.6%) had decreased Hgb levels measuring from 6 to 10 g/dl, a prominent risk factor for both ESRD and CHF (Table 5).

As mentioned, anemia is associated with changes in left ventricular anatomy among patients with CKD and it is possible that these changes could contribute to worsening left ventricular diastolic and/or systolic dysfunction and consequent increased risk of death.[21] This was seen in our study (Table 2). High prevalence of anemia in our study is also considered causative of poor prognosis of CHF, as seen in Tables 5 and 6.

Uraemia, diabetes and fluid overload

Uremia caused by diabetes mellitus is found in as many as 25% of the population presenting with ESRD and constitutes a major medical problem.[22] In our study, 11 (9.4%) patients had diabetes mellitus (Table 2).

Fluid retention is the main clinical feature in several pathological conditions. In our study, patients were clinically diagnosed for CHF on echocardiography and with relevant signs and symptoms to distinguish from fluid over load. Additionally, 67 patients (57.3%) recorded having shortness of breath, 41 patients (35%) having pedal edema, 4.3% ascites and 20.5% pericardial effusion (Table 4), with anemia a probable consequence of fluid over load, sodium retention and CHF.

Serum Urea and Serum Creatinine concentrations

Higher creatinine values have been associated with longer treatment times and lower serum creatinine values associated with shorter treatment times.[23] Serum urea concentration is also an important variable in dialysis dose adjustment. In our study, despite dialysis being conducted twice in a week, all patients had high levels of serum urea and serum creatinine. Consequently, it will be recommended in our patients that the frequency of dialysis be increased to maintain the levels of serum urea and creatinine.

Serum potassium and Serum Calcium

In our study, 40.2% patients presented serum potassium levels ranging from more than 5 mmol/L up-to 10 mmol/L (Table 5). Among our study population, 36.8% of patients also had palpitations, which may be resultant of hyperkalemia (Table 5). However, there are certain other factors that can result in the development of palpitations and should be accessed in future studies. Poor calcium-phosphorus control may be important contributing factors for heart failure in dialysis patients.[13] The calcium levels in our study population were in lower limit or within normal limits.

Conclusion and recommendations

The incidence of CHF was relatively high in our study population with ESRD. Frequent recurrence of the disease, re-hospitalization and enhanced mortality in our study is evident of adverse prognosis of CHF in this ESRD population. Future recommendations include that an echocardiography should be mandatory just before the initiation of hemodialysis in ESRD patients in Pakistan and should be repeated at three monthly intervals. Cardiac evaluation should be mandatory prior to vascular access for hemodialysis. We also recommend that a cardiologist be appointed in all major nephrology centers to enable a joint consensus with nephrologists to improve the management of CVD in ESRD patients. We believe, certainly in Pakistan and other similar countries, that it would advantageous if a nephrologist was also appointed in cardiac units.

Clinicians and general practitioners are also advised to recommend initial renal function tests, echocardiography and chest X-Rays to all patients presenting early signs and symptoms of renal and cardiac complications. In addition to hemodialysis, another viable option is opting for peritoneal dialysis that has better tolerance in CHF patients. Immediate referral to a nephrologist or cardiologist is also recommended in case of any diagnostic changes. Patients and their families should be encouraged to approach a nephrologist or cardiologist in case of complications and we believe this can be aided by providing community-based education towards renal and cardiac diseases.

LIMITATIONS

We are aware that the data concerning total cholesterol, triglycerides, low density lipoprotein (LDL), high density lipoprotein (HDL) and serum phosphorus levels of the patients were not routinely available. Additionally, based on the objects of the research, we did not consider the pharmacological therapies into account. Furthermore, the limited sample size is a concern

when discussing the generalizability of the results. However, Quetta is representational of a number of cities in Pakistan and we believe our findings are robust in view of the methodology employed, providing guidance. We will be following this up in future research.

CONFLICTS OF INTEREST

The authors declare no conflict of interest.

ABBREVIATIONS

CHF: Congestive Heart Failure **ESRD:** End-Stage Renal Disease; **LEVF:** Left Ejection Ventricle Fraction; **CVD:** Cardiovascular Diseases; **HF:** Heart Failure; **HTN:** Hypertension; **ARF:** Acute Renal Failure; **CKD:** Chronic Kidney Disease; **HD:** Hemodialysis; **SPHQ:** Snademan Provincial Hospital Quetta; **BINUQ:** Baluchistan Institute of Nephro-Urology Quetta; **LVD:** Left Ventricular Dysfunction; **IHD:** Ischemic Heart Disease; **LVH:** Left Ventricular Hypertrophy; **CMP:** Cardiomyopathy; NIDDM Non-Insulin Dependent Diabetes Mellitus; **IDDM:** Insulin Dependent Diabetes Mellitus; **AVF:** Arterio-Venous Fistula; **EF:** Ejection fraction; **HB:** Hemoglobin; **BP:** Blood Pressure; **ACC:** American College of Cardiology; **AHA:** American Heart Association; **HFSA:** Heart Failure Society of America; **ACCF:** American College of Cardiology Foundation; **CVC:** Central Venous Catheterization; **CV:** Cardiovascular; **LDL:** Low Density Lipoprotein; **HDL:** High Density Lipoprotein.

SUMMARY

Incidence of congestive heart failure was relatively high in these patients. Frequent recurrence of the disease, re-hospitalization and enhanced mortality is evident of adverse prognosis of congestive heart failure in end stage renal disease patients. Cardiovascular diseases must not be considered separately in end stage renal disease patients. Appropriate management and correction of risk factors of co-morbid conditions can be helpful in improving the disease condition.

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