

# Referral Pattern of End Stage Kidney Failure Patients at Shaikh Zayed Hospital, Lahore

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## ABSTRACT

The outcome in end stage kidney disease depends upon the presence of numbers and severity of complications like anemia, hypoalbuminemia, acidosis, hypertension and degree of uremia at the time of start of renal replacement therapy (RRT). It has been observed that patient who are referred early to the nephrologist have lesser number of complications, get elective vascular access, have the choice to select the mode of RRT and their survival is much better as compared to those who are referred late and require emergency dialysis. In the present study, out of total 210 patients who were admitted for dialysis, only 46 (22%) were under the care of nephrologist. Their mean hemoglobin was 8.2gm/dl, Blood Urea Nitrogen (BUN) 121 mg/dl, serum creatinine 14.67mg/dl and serum Bicarbonate was 10.92meq/l. Systolic blood pressure was less than 140mmHg in only 20 patients (10%) and diastolic blood pressure was less than 90mmHg in only 23 patients (11%). Only 14 patients (6.7%) had already created arterio venous fistula on hospitalization. One hundred and eighteen patients (56%) had fluid over load, 93 patients (44%) had Hyperkalemia, 96 patients (46%) had metabolic acidosis and 71 patients (34%) had uremic encephalopathy. Presence of these complications in such large number of patients and other bad prognostic factors as low mean hemoglobin, sever uremia, sever metabolic acidosis and hyperkalemia at the time of start of RRT indicates poor pre ESRD management in our patient and signifies the need for early referral of renal failure patients to Nephrologist.

**Keywords:** Referral pattern; End Stage Renal Disease; ESRD.

## BACKGROUND

**E**nd Stage Renal Disease (ESRD) is associated with high morbidity and mortality. Proper pre-ESRD treatment can delay the need of dialysis and also reduce complications of ESRD. The patient who are referred late or who start dialysis late have more complications, e.g. more severe anemia, more acidosis, low albumin, more hyperkalemia and higher level of blood urea and creatinine. They also found to have less control on their blood pressure and more severe left ventricular hypertrophy. As a result their long term out come and life expectancy is not as good as compared to those patients who are referred early to the nephrologist.<sup>1-2</sup> Early referral to the nephrologist, not only prevents the long term complications of ESRD patients, but also

interventions like elective construction of fistula or placement of permanent peritoneal catheter, reduces the need for emergency dialysis and thus also minimize the hospitalization stay and overall expenditure. Moreover early referral to nephrologist give the chance to the patient to select the mode of renal replacement therapy (RRT).<sup>3-4</sup> Late referral is common problem all over the world is of different extent in different countries.<sup>5-7</sup> We suspect that this problem might be more severe and pre ESRD management may be more suboptimum in our country and therefore started this study.

## Aims and objectives

This study was carried out to find out the referral pattern, extent of uremic complications and outcome in patients with advance renal failure

referred to Shaikh Zayed Hospital, Lahore for treatment.

**Inclusion criteria**

All those patients suffering from ESRD due to any reason and referred to SZH first time with no prior history of dialysis were included in this study.

**PATIENTS AND METHODS**

Two hundreds ten patients fulfilling the above mentioned criteria during one year from June 2005 to June 2006 were included in the study. Their detailed history and clinical examination was done with special emphasis to determine the cause of renal failure, previous history of medical treatment and consultation, blood pressure control, vascular access and vaccination for hepatitis B. Laboratory investigations like, Hemoglobin, blood urea, serum creatinine, sodium, potassium, calcium, phosphorus, albumen, total protein, ultrasound, HbsAg, Anti HCV and echocardiography were done for every enrolled patient.

Severe metabolic acidosis was defined as pH less than 7.2.

Hyperkalemia was defined as serum potassium more than 5.5mg/dl.

Prior follow up was defined as medical treatment for the last 12 weeks or more weeks before coming to Shaikh Zayed Hospital, Lahore.

**RESULTS:**

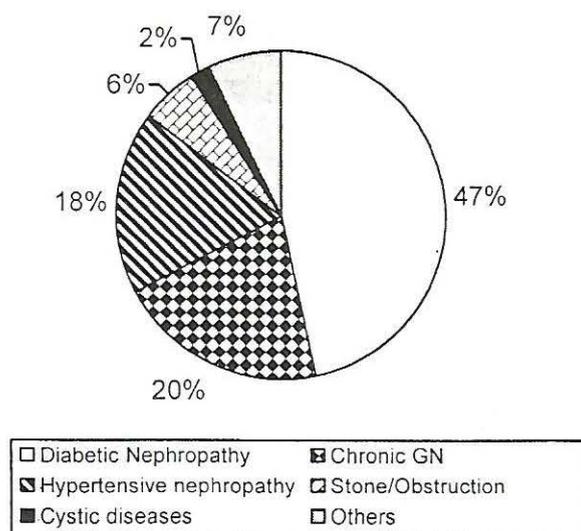
Out of total 210 patients, 138 were male and 72 were females. Their mean age was 49.34 years (16-80±14.71). Out of these 210 patients, 193 (92%) were admitted through accident and emergency department and only 17 patients (8%) admitted through outdoor patient department. Their mean systolic blood pressure was 158±27.6mmHg (range, 70-250) and mean diastolic blood pressure was 95±14.5 mmHg (range, 50-125). The common presenting symptoms and their frequencies are shown in Table 1, Symptoms pertaining to the gastrointestinal system and volume overload, such as nausea, vomiting, shortness of breath and edema were the most common encountered symptoms.

**Table 1: Symptoms at presentation.**

Symptom	Frequency
Nausea and Vomiting	153 (73%)
Shortness of breath	148 (71%)
Swelling (Edema)	118 (56%)
Weakness	127 (60%)
Oliguria	128 (61%)
Drowsiness/Restlessness/ Fits	75 (36%)
Chest pain	26 (12%)
Pruritis	33 (16%)
Others (Pyuria, Hematuria, Flank pain etc)	19 (9%)

Eighty two patients (39%) were being treated by general practitioners, 48 patients (23%) by medical specialists, 46 patients (22%) by nephrologists, 6 patients (3%) by urologists, 8 (4%) by Hakeems, 7 (3%) by others and 13(6%) were not getting any treatment before coming to Shaikh Zayed Hospital, Lahore. Fifty one patients (24.3%) were already vaccinated for hepatitis B, 64 patients (30.5%) accepted that they had already been advised for RRT, while only 14 patients (6.7%) already had A/V fistula.

The etiology of the renal failure is shown in Figure 1.



**Fig. 1: Etiology of ESRD.**

The laboratory data of the patients is shown in Table 2.

Table 2: Laboratory data.

Laboratory findings	Mean	Range
Hemoglobin (gm/dl)	8.2± 2.0	3.3-8.2
Blood Urea Nitrogen (mg/dl)	122± 49.5	43-282
Creatinine (mg/dl)	14.67± 6.7	4.8-46
%Serum Potassium (meq/l)	4.8± 1.0	2.5-7.5
Serum Sodium (meq/l)	137± 6.4	120-161
Serum Calcium (mg/dl)	8.0± 1.3	4.5-13.5
Serum Phosphorus (mg/dl)	6.4± 2.4	2.9-15.2
Calcium Phosphate product	51.6±19.53	15.6-133.76
Serum Albumen (gm/dl)	3.5± 0.69	2.1-5.1
Total protein (gm/dl)	6.4± 0.91	3.6-8.6
Blood Ph	7.25± 0.14	6.7-7.6
HCO <sub>3</sub> (meq/l)	10.92± 7.0	4-29
PCO <sub>2</sub>	21± 8.0	10-45

Twenty three (11%) were found to have hepatitis B surface antigen (HbsAg) positive, and 43 (20.5%) had Anti HCV positive. On echocardiography, the mean ejection fraction was 62±12.6 (range, 15-90). Fifty six patients (27%) had pericardial effusion, 101 patients (48%) had moderate left ventricular hypertrophy (LVH) while 27 patients (13%) had severe LVH.

Only few patients had satisfactory clinical and laboratory parameters according to the DOQI guideline for pre ESRD management, as depicted Table 3.

At the time of admission only few patients were able to achieve target parameters according to the DOQI guideline as depicted Table 3.

Table3: Patients achieved targets according to DOQI guidelines.

Parameter	Target	No. of patient at target level
Hemoglobin	11-12	7 (3.3%)
Serum Phosphorus	3.5-5.5	34 (16%)
Calcium Phosphorus Product	55mg <sup>2</sup> /dl <sup>2</sup>	68(32.4%)
LVH	Nil	15 (7%)
Systolic BP	130mmHg	20 (10%)
Diastolic BP	80mmHg	23 (11%)

The complications of uremia and their frequencies were noted as, uremic encephalopathy was present in 71 (34%) severe metabolic acidosis in 96 (46%), hyperkalemia in 93 (44%), pericarditis

in 29 (14%) and volume overload in 118 patients (56%).

One hundred and ninety one patients (91%) got emergency acute peritoneal dialysis (APD), 14 patients (7%) got hemodialysis and 5 patients (2%) refused for any kind of acute dialysis. During hospital stay 21 patient (16%) died. On discharge, 118 patient (55%) opted for hemodialysis, 11patients (5%) for chronic peritoneal dialysis, 4 patients (2%) were willing to go for kidney transplantation, 38 (18%) left the hospital without any future plan and 26 patient (12%) refused any kind of permanent RRT due to different reasons but mainly because of the non affordability.

### DISCUSSION

The morbidity and mortality in patients with ESRD is directly related the number and severity of complications of uremia, such as anemia, degree of uremia, hypoalbumenemia, hyperparathyroidism, hyperkalemia and metabolic acidosis.<sup>1, 8</sup> Timely referral to nephrologist and pre ESRD management have a great impact not only on the quality of the life but also on the life expectancy of the patients suffering from ESRD. Early intervention by the nephrologist is not only associated with the slower down of the progression of the renal disease but also the number and severity of above mentioned bad prognostic complications at the time of start of RRT were found to be far less in early referred patients compared to late referred patients. As a result survival is much better in patients referred early compared to the late group.<sup>1-3, 9-10</sup> In the present study only 46 patients (22%) were getting treatment by a nephrologist. This can well explain their low mean hemoglobin (8.2gm), low mean serum bicarbonate (10.9meq/l), very high mean serum creatinine (14.67mg/dl) and these values are very similar to that of the late referral group of the study by E Dogan and R Erkoc. Another bad prognostic factor is poor control of blood pressure and LVH at the start of RRT and it was found to be more common in those patients who see the nephrologist late and need unplanned dialysis.<sup>2,11</sup> Unfortunately only 20 patients (10%) have well controlled systolic BP, 23 patients (11%) had controlled diastolic BP and this would be the reason why majority of the

patients (128 patients, 61%) had LVH.

As the uremic toxins negatively influence the patient's ability to understand and make decisions so the patients who are referred earlier in a good health to a nephrologist not only enjoy the freedom to select the mode of RRT, can electively get a vascular access or permanent peritoneal catheter placement and have less number of complications during their course of illness. Timely construction of vascular access or placement of permanent catheter not only prevents the need for emergency dialysis and hospitalization but life expectancy is much better in those patients who have smooth transaction from Pre ESRD to dialysis stage and don't need an emergency dialysis.<sup>3,12-13</sup> Unfortunately in the present study majority of the patient were not prepared for the RRT, only 14 patients (7% of the total 210 patients and 30 % of the 46 patients under care of nephrologist) had vascular access before the start of RRT. Start of dialysis without prior construction of vascular access in 196 patients (93%) not only compromised the outcome of the treatment but also put addition financial burden for emergency dialysis and prolonged hospitalization.

In developed countries, most of the patients who start planned RRT preferred for Chronic Peritoneal Dialysis (CPD), while majority of the patients who started unplanned RRT due to late referral selected hemodialysis,<sup>5,11,14</sup> but in our study majority of the patient (55%) selected hemodialysis. One of the reason for this difference is because majority our patient started RRT with emergency dialysis and there was no time to put the permanent peritoneal catheter. The second reason is the limited availability and comparatively high cost of the CPD system in our country.

Another well established fact is the low chance of getting kidney transplantation in late referral patients, probably because of the number of complications at the start of RRT and considered not good candidate for kidney transplantation,<sup>6,11,13</sup> and this has been well reflected in the present study where only 4 patients (2%) opted for transplantation.

Late referral to the nephrologist is a universal problem to different extent in different countries (30-50%)<sup>5-7,11</sup> and also varies in different ethnic and socioeconomical groups even in

developed world<sup>15</sup>. Indo-Asian patients in these countries get nephrology consultation and start dialysis very late with a number of complications. It may be because of lesser degree of socioeconomically status compared to the white population<sup>16</sup>. The patients are not covered by medical insurance and those patients who are living far away from a kidney care centers usually see the nephrologist late and need more frequent emergency dialysis<sup>17</sup>. In our study this figure is quite high and 164 patients (78%) were not getting nephrologist's treatment till the start of RRT. Is this unfortunate health care status is reflection of overall low economical condition of the common man in the country? This is also similar to other developing countries like Tunisia, where delayed referral was found to be quite common and 91% of patient required temporary vascular access and emergency dialysis.<sup>18</sup>

## CONCLUSION

Most of our patient of renal failure do not get nephrologist advise till they reach end stage kidney disease and they admit for emergency dialysis with all the bad prognostic factors such as very high urea, creatinine, hyperkalemia, sever metabolic acidosis poorly controlled blood pressure and LVH. Very few patients already had vascular access for the dialysis before the start of RRT. Because of these reasons both short and long term prognosis may not be expected very well. There is an urgent need for a mass complain to create an awareness not only in the patients, but also in medical professionals to refer the renal patient to nephrologist and also to create the vascular access as early as possible.

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