Spectrum of Renal Disorders in a Tertiary Care Hospital in Haryana

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Abstract

Introduction: There is a paucity of data pertaining to spectrum of renal diseases in various parts of India. Available literature has emphasized more on specific clinical syndromes of renal diseases rather than over all spectrum. The present study highlights specimen of symptomatic renal disorders at a tertiary care hospital in Haryana and will find place for better resource management and planning.

Materials and Methods: It included 1806 patients either presenting for the first time to nephrology outpatient department of admitted between Jan 1996 - Dec 2001 to the institute. The study was retrospective for five years (1996-2000) and prospective for one year. Records of all these patients were analyzed and patients were grouped in different renal syndromes.

Results: Mean age of patients was (38.79 ± 15.15 years) with male preponderance in all renal syndromes. Chronic renal failure (CRF) was the commonest presentation (56.02%). Nephrotic syndrome accounted for 22.36% whereas acute renal failure (ARF) was seen in 12.84%. Other presentations were acute nephritic syndrome (6.75%) and asymptomatic urinary abnormality (AUA) (0.99%). Chronic glomerulonephritis (CGN) (39.32%) and diabetic nephropathy (DN) (19.16%) were leading causes of CRF. Medical ARF accounted for 2/3rd of the cases of ARF and surgical etiology was seen in 1/5th of causes whereas obstetric cause was responsible for 1/7th of the cases. Minimal change disease (MCD) (33.33%) was the commonest cause of primary nephrotic syndrome followed by memranoproliferative glomerulonephritis (MPGN). Secondary glomerular diseases were found in 21.28%. Post-streptococcal glomerulonephritis (PSGN) was the commonest cause of nephritic syndrome (37.70%).

Conclusion: It is the first large study of its kind from a tertiary health care centre of Haryana. Male patients in their peak of life (3rd and 4th decade) were the major candidates requiring renal care with CRF as the commonest presentation and diabetic nephropathy as the second commonest cause of CRF after CGN. We need more Indian studies on spectrum of renal diseases for better available resource management. ©

INTRODUCTION

Spectrum of renal disease varies significantly in different parts of the world as it is influenced by geographical, environmental and socioeconomic factors in that region. Since spectrum of kidney diseases has dynamic behaviour, therefore economic differences justify different magnitude in developing and developed countries. The setting where the disease appears or the place where it is treated also shows the differences in the spectrum. Further the need of dialysis in a given area depends on the level of health care offered there. The data from India and other countries suggests that when certain economic level is achieved, the need for modality of treatment tend to stabilize.1,2 With the medical advancement, the ARF due to obstetrical causes has declined due to the economic power and availability of hospitalization.3 On the other hand, because of the paucity of public health facilities, diarrheal diseases and cholera continue to be there as the causes of ARF.4

Since renal disorders are associated with high degree of morbidity and mortality, therefore in order to plan fund allocation in this area of health care, the magnitude and type of renal problems need to be evaluated, especially in developing countries like India where the budget for this sector is very low. However, there is paucity of data and no planned attempts have been made in this direction, hence this study.

MATERIAL AND METHODS

The study was carried out in the Department of Nephrology, Pt. BD Sharma, PGIMS, Rohtak. Total duration of study was 6 years. It was retrospective
for 5 years from 1996 to 2000 and prospective for one year up to Dec. 2001. The records of patients with renal diseases who were admitted in PGIMS, Rohtak and all out door patients who attended nephrology clinic were analysed. Patients of pediatric age group (<14 years) were not included in the present study. Records of these patients were scrutinized based on clinical presentation, biochemical parameters, sonographic findings and other available investigations. These parameters were used to group the patients into broad categories like ARF, CRF, nephrotic syndrome, obstructive uropathy and miscellaneous.

ARF was defined when there was elevation of serum creatinine more than 50% of basal values or absolute increase of 0.5-1.0 mg/dl despite correction of fluids and electrolytes. The diagnosis of CRF was made on the basis of serum creatinine concentration of more than 2 mg% with no evidence of recovery over next three months, clinical features of CRF and/or azotemic symptoms of more than three months duration and evidence of B/L contracted kidneys. Exception to the latter included polycystic kidney disease, diabetic nephropathy, amyloidosis and multiple myeloma.

Nephrotic syndrome was defined as proteinuria >3.5 g/day with hypoproteinemia, hyperlipidemia, edema and hypercoagulability. Etiology of NS was determined on histopathological criteria. Acute nephritic syndrome was defined when there was evidence of acute glomerulonephritis with dysmorphic RBC/RBC cast in urine usually as with some degree of hypertension and/or histopathologic documentation. Asymptomatic urinary abnormality (AUA) was defined if patient had non-nephrotic isolated proteinuria and/or significant dysmorphic RBC in urine in absence of any other clinical nature of renal disease or negative investigation for surgical cause. Patients who did not fulfill above criteria were included in miscellaneous category.

RESULTS

A total of 1806 patients of renal diseases were included in the study. The total number of patients in retrospective group was 1480 and in the prospective group it was 326. 1229 patients were males (mean age 41.52 ± 16.51 years) and 577 were females (mean age 38.79 ± 15.15 years). Chronic renal failure (CRF) was the commonest presentation (56.02%). Nephrotic syndrome accounted for 22.36%, whereas acute renal failure (ARF) was seen in 12.84%. Other presentations were acute nephritic syndrome (6.75%) and asymptomatic urinary abnormality (AUA) (0.99%) (Table 1).
A total of 318 patients of primary glomerulonephritis presented as nephrotic syndrome. Mean age was 35.67 ± 14.62 years. MCD was the commonest cause (33.33%) followed by MPGN (18.23%) (Table 2).

Secondary causes of NS included amyloidosis (74.40%), diabetic nephropathy (18.60%), and lupus nephritis (6.97%). Tuberculosis (66.6%) was the commonest cause of secondary amyloidosis followed by chronic supplicative lung disease (25%), rheumatoid arthritis and chronic osteomyelitis (4.68%).

Of 232 patients of ARF, medical renal failure was the commonest cause (64.66%) followed by surgical (23.28%) and obstetrical (12.06%). Among the medical conditions acute gastroenteritis (AGE) (20%), acute glomerulonephritis (AGN) (16%), septicemia (13.33%) and falciparum malaria (12%) predominated. Post operative and trauma (44.44%), stones (18.51%), benign prostatic hyperplasia (BPH) (14.81%) were the main surgical causes of ARF. Eclampsia of pregnancy (42.85%), septic abortion (21.42%), postpartum hemorrhage (14.28%) were main causes of obstetrical ARF (Table 3). In geriatric age group, medical causes were responsible for 57.14%, followed by surgical (41.17%) cases of ARF.

A total of 122 patients presented with nephritic syndrome. Mean age was 31.06 ± 11.98 years. Post streptococcal glomerulonephritis (PSGN) (37.70%) was commonest cause followed by mesangioproliferative glomerulonephritis (MeSPGN) in 21.37% of cases. Rapidly progressive glomerulonephritis (RPGN) was seen in 19.67% of cases (Table 2).

### DISCUSSION

Health care in India is primarily supported by the government up to a limit and beyond that patients themselves have to financially support their health need. In view of above facts we thought that, a tertiary large government hospital would best represent in spectrum of the renal diseases, requiring hospital supported care.

Males predominated in the majority of clinical syndromes and the mean age was 41.52 years. The most common presentation in the study was CRF, which was in >50% of the patients, with an average age of presentation 49.89 ± 15.76% indicating an earlier onset of CRF in Indian continent. Majority of our patients are admitted cases because our institute is a tertiary care hospital providing dialytic facility to the entire state. The patients of CRF are admitted as they can not afford the dialytic therapy due to financial problems and usually present with complications like fluid overload, acidosis and anaemia or uncontrolled hypertension. The other reason of higher number of CRF in the study is also due to the fact that government reimburses for admitted patient, the cost of management of CRF, which includes consumables for hemodialysis and erythropoietin, therefore the Haryana government servants or their dependents are admitted here, thirdly patients requiring referral for renal transplant are also admitted for evaluation before referring them to transplant centers. Our study is comparable to AIIMS study, which also reported higher number of CRF cases, since AIIMS has paucity of indoor beds; therefore all cases of CRF are treated there on OPD basis. Three studies from north...
India (PGI, AIIMS, SGPGI) have also reported similar observation, however, a study from South, Apollo Madras reported CIN to be one of the commonest cause seen in 27.8% of patients (Table 4).

CIN in this study was primarily diagnosed on clinical criteria with histology evidence only in 12% of the cases. In our study CIN was found in 16.6% of cases compared with 16.5% and 14.3% cases reported from SGPGI and PGI respectively. The observation of the study further proves that a significant number of glomerulonephritis patients may clinically present as CIN. Another interesting report from UK highlighted a strong association with the Indian race and idiopathic interstitial nephritis seen in ethnic Indian from local community. The study included group of people who were subjected to renal biopsy for either abnormal renal function or urinary sediment. Hence it reflects that interstitial nephritis is an important cause of CRF in India and special attention is required to identify its true role.

In the present study diabetic nephropathy was second commonest cause of CRF (19.16%) after CGN (36.32%). Various studies in India as depicted in Table 4 have shown that DN constitutes 23-28% of the cases of CRF. The majority of our patients were males in their middle age (mean age 51.58 ± 12.54%), USRDS 95, listed DN to be responsible for 36.2% of CRF.1

Studies from North India have reported that 47% of cases of CRF > 40 years of age were due to DN. This would indicate that prevalence of DN is not different in India particularly when they are matched for age, however, type I DM is not that common in India and majority of our cases with DM are due to type II. It would be important to keep in mind that as against the diagnosis of CGN versus CIN, the diagnosis of DN is very certain.

Benign nephrosclerosis was the cause of CRF in 6.52%, which is much lower than that reported from western literature. Sharma et al in a autopsy study have reported that its incidence in autopsy was 22% and it was one of the common cause of CRF in India.10

After CRF the second commonest presentation in the study was NS, seen in 22.36% of cases. Of all the cases primary GN was seen in 78.71% cases while secondary glomerular diseases in 21.82% of patients. Nearly similar data has been reported from PGI Chandigarh, where primary GN was seen in 69% and secondary in 31% of cases.2 In study from AIIMS, of all cases of NS, primary glomerular disease was seen in 58.5% cases and secondary seen in 41.5% cases.6 In various reports of India, MCD has been reported to be the commonest cause of NS seen in 23-37% of cases followed by diffuse proliferative (19%), membranoproliferative (18%), membranous (10%) and FSGS (9%).3

In the present study MCD was seen in 1/3rd of the cases followed by MPGN (18.33%), which is comparable to other studies carried out in India.2,6 Amongst the secondary causes of NS amyloidosis was found to be the commonest cause seen in 40.40% of cases followed by diabetes and lupus nephritis in 18.60% and 6.97% cases respectively. In PGI study, amyloidosis was the commonest cause of secondary GN seen in 39% followed by lupus in 22% and DN in 20%.2 However in study from AIIMS, diabetes was the commonest cause of NS seen in 53.5% followed by amyloidosis in 14.4% cases and lupus in 4.3% of cases.5 Tuberculosis was the commonest cause of amyloidosis of kidney in our study. Chugh et al in their study on the pattern on renal amyloidosis also reported tuberculosis as the commonest cause of renal amyloidosis.12

ARF constituted 12.84% of the clinical syndromes. Aggarwal et al in a study of spectrum of renal disease in Indian continent reported ARF comprised only 1.9% of all the patients.4 This contrast was seen because their study was OPD based while most patients develop ARF after hospital complication like following surgery, obstetrical complication or while admitted in medical ward. Our study patients initially presented in OPD/emergency department. Medical causes predominated in the present study followed by surgical and obstetrical respectively. Chitalia et al and Utar et al have also reported similar findings.

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**Table 4 : Major comparison among the studies on CRF reported from India**

<table>
<thead>
<tr>
<th>Year</th>
<th>Prospective/ Retrospective</th>
<th>Source</th>
<th>Time period</th>
<th>N</th>
<th>Commonest %</th>
<th>DN</th>
<th>CIN</th>
<th>HTN</th>
<th>PKD</th>
<th>OU</th>
</tr>
</thead>
<tbody>
<tr>
<td>1996</td>
<td>Prospective</td>
<td>Hospital</td>
<td>1 yr</td>
<td>835</td>
<td>CGN 28.7</td>
<td>23.2</td>
<td>16.5</td>
<td>4.1</td>
<td>2</td>
<td>6.4</td>
</tr>
<tr>
<td>1993</td>
<td>Prospective</td>
<td>Hospital</td>
<td>6 mths</td>
<td>453</td>
<td>CGN 36.6</td>
<td>23.8</td>
<td>14.3</td>
<td>13.5</td>
<td>3.5</td>
<td>-</td>
</tr>
<tr>
<td>1999</td>
<td>Retrospective</td>
<td>Hospital</td>
<td>6 yrs</td>
<td>2028</td>
<td>CIN 27.8</td>
<td>26.7</td>
<td>27.8</td>
<td>10</td>
<td>2</td>
<td>1.2</td>
</tr>
<tr>
<td>1994</td>
<td>Prospective + Retrospective</td>
<td>OPD</td>
<td>10 yrs</td>
<td>14796</td>
<td>CGN 48.5</td>
<td>28.4</td>
<td>7.5</td>
<td>5.7</td>
<td>1.9</td>
<td>3</td>
</tr>
<tr>
<td>2000</td>
<td>Prospective + Retrospective</td>
<td>OPD +</td>
<td>6 yrs</td>
<td>1806</td>
<td>CGN 39.32</td>
<td>19.16</td>
<td>16.6</td>
<td>6.52</td>
<td>4.72</td>
<td>6.12</td>
</tr>
</tbody>
</table>

OU - Obstructive Uropathy; N - Number; SGPGI - Sanjay Gandhi Post Graduate Institute of Medical Sciences, Lucknow; PGI - Post Graduate Institute of Medical Education and Research, Chandigarh; Apollo - Madras; AIIMS - All India Institute of Medical Sciences, New Delhi.
Eclampsia as cause of obstetrical ARF was seen in 35.29% followed by septic abortion and post abortion ARF. Chetalia\textsuperscript{2} and Utar\textsuperscript{3} et al also reported similar observation. Pregnancy related events have become a rare cause of ARF in western countries because of safe and timely delivery of complicated pregnancies, more effective treatment of pre eclampsia and disappearance of septic abortion. In contrast in India, because of the lack of adequate antenatal facilities especially in rural areas, pre eclampsia and eclampsia are underdiagnosed and hence high incidence of complications is noted. The incidence of septicaemia is also high as there is increased septic abortion rate secondary to female foeticide.

In geriatric age group, volume loss due to acute gastroenteritis was the commonest medical cause of ARF, as elderly are more prone to develop pre renal ARF due to dehydration because of diminished fluid intake and impairment of aging kidneys to conserve sodium and water. The findings are similar to that reported by Kumar\textsuperscript{4} and Sico et al.\textsuperscript{5} BPH was responsible for >50% of surgical causes of ARF comparable to that reported by Arora et al.\textsuperscript{6}

In the present study 6.75% of patients presented as acute nephritic syndrome. Post-infective GN was the commonest cause. In majority of their patients diagnosis was made clinically on basis of recent infection, clinical presentation and rapid recovery. RPGN was seen in 1967% of cases. The results are comparable to CMC, Vellore\textsuperscript{7} and AIIMS\textsuperscript{8} study. MeSPGN was the cause of acute nephritic syndrome in 24.59% cases and was the second commonest cause. In study carried out at CMC, Vellore\textsuperscript{17} it was seen in 21.37% cases and was also the second commonest cause (Table 2).

Therefore, the present study reveals that male patients were predominant in all renal syndromes, presenting during the peak productive years of life (3rd and 4th decade). CGN was the commonest cause of CRF followed by diabetic nephropathy. Considering the fact that more than 50% patients of renal diseases were constituted by CRF alone in the present study, means a large economic impact. Majority of CRF patients in our country cannot afford transplantation and only a few tertiary care government hospitals provide this facility to a common man and hence they are dependent on dialysis for maintaining and prolonging life. There is no national registry available for renal patients in India. Only a few studies are available on specific renal syndromes and a very few on spectrum of renal diseases as a whole. More studies are needed on spectrum of renal diseases. Once this is available, the information will be more useful for better resource management and planning.

REFERENCES
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Announcement
PD Hinduja National Hospital and Medical Research Centre, Mumbai announces Two Fellowships in Infectious Disease from 1/4/2007 to 31/1/2008. Eligibility 0-10 yrs post DNB/ MD Medicine / Microbiology. Last date for application 15\textsuperscript{th} March 2007.