International Journal of Medical Research Professionals

Original Article

Histopathological Pattern in Patients Presenting with Rapidly Progressive Renal Failure: A Single Centre Study

Sharma M[1*], Bordoloi P[2], Das HJ[3], Barman AK[4]
[1]Associate Professor, [2]Registrar, [3]Senior Resident, [4]Professor,
Department of Nephrology, Gauhati Medical College, Guwahati, Assam, INDIA.

Article History
Received: 08 Mar 2016
Revised: 10 Mar 2016
Accepted: 14 Mar 2016

***Correspondence to:**
Dr. Manjuri Sharma
Associate Professor
Department of Nephrology
Gauhati Medical College and Hospital, Guwahati
manjurisharma@yahoo.com

ABSTRACT

Background: Rapidly Progressive Renal Failure (RPRF) is a clinical syndrome characterized by rapid loss of renal function, over a period of few weeks. A wide variety of different diseases may present with a similar clinical picture and so it is essential to properly work up cases of RPRF so that the exact diagnosis is established and appropriate treatment initiated. The present study was conducted to evaluate the pattern of histopathology in patients presenting with RPRF and to correlate the outcome of the patients with reference to the histological pattern.

Method: The present study was carried out in the Department of Nephrology, Gauhati Medical College and Hospital over a period of 2 years from 2013 – 2015. A total of 80 patients of RPRF were included.

Results: Majority patients belonged to the age group of 21-30 years. Out of 80 patients, the most common histological diagnosis was lupus nephritis (LN), found in 30 patients (37.5%) followed by IgA nephropathy in 20 (25%) patients, pauci immune glomerulonephritis in 8 (10%) patients, post infectious glomerulonephritis in 7 (8.75%) and multiple myeloma in 6 (7.5%) patients. There were 4 (5%) patients each of acute interstitial nephritis (AIN) and membranoproliferative glomerulonephritis (MPGN) Out of all the patients, 2 patients of SLE, 2 patients of Multiple myeloma and the patient of cryoglobinemia expired.

Conclusion: Patients presenting as RPRF is commonly encountered in this part of the country. A prompt diagnosis and appropriate treatment is most essential to prevent progression to ESRD.

KEYWORDS: Histopathology, Lupus nephritis, Rapidly progressive renal failure.

INTRODUCTION

In clinical medicine, physicians encounter patients who present with progressive renal impairment of seemingly unknown etiology. The initial clinical diagnosis of these cases may be called RPRF (Rapidly progressive renal failure) which may be defined as progressive renal impairment over a period of few weeks.[1] Since a wide variety of different diseases may present with a similar clinical picture, it is essential to properly work up cases of RPRF so that the exact diagnosis is established and appropriate treatment initiated.

AIM OF THE STUDY

To evaluate the pattern of histopathology in patients presenting with RPRF and to correlate the outcome of the patients with reference to the histological pattern.

MATERIALS AND METHODS

The study was conducted in the Department of Nephrology, Gauhati Medical College and Hospital, Guwahati, Assam, India for duration of 2 years (Jan 2013-Dec 2015). 80 patients of RPRF were included in the study. Diagnosis was suggested by presence of proteinuria, active sediments in urine, deranged renal function, some special serological investigations like ANA(antinuclear antibody, dsDNA (anti double stranded DNA), ANCA (anti neutrophillic cytoplasmic antibody), Complement level, ASO (anti streptolysin O) titre, serum electrophoresis and ultrasonography. Renal biopsy was performed in all the cases

Inclusion Criteria:

- Patients of any age and gender presenting with features of RPRF.

Exclusion Criteria:

- Known patients of hypertension, diabetes mellitus or significant past history of renal diseases.

RESULTS

The study included a total of 80 patients of which 46 (57.5%) were males and 34 (42.5%) were females with male:female ratio of 1.35: 1. Most of the patients in our study were in the age group between 21 – 30 years (47.5%) followed by the 31- 40 years group (20%). The age distributions of the patients are shown in table 1.

Regarding the presenting features, the most common was systemic symptoms like fever and malaise in 80 % of patients followed by pedal oedema in 70% of patients, hypertension in 65%, oliguria in 56.25%, hematuria in 37.5% and joint pain in 32.5%. The presenting features are shown in table 2.

All the patients (100%) in the present study had albuminuria and 81.25% had active urinary sediment in the form of RBC / RBC cast. All 80 patients had some degree of renal dysfunction as evidenced by deranged renal function test (RFT). 30 (37.5%) patients tested positive for ANA (antinuclear antibody) and dsDNA (anti double stranded DNA), 37(46.25%) had hypocomplementemia, increased ASO (anti streptolysin O) titre was seen in 7 (8.75%) patients, 1 (1.25%) patient tested positive for ANCA (anti neutrophillic cytoplasmic antibody), serum electrophoresis for M band was positive in 6 (7.5%) patients.

All the patients were subjected to an ultrasonography examination of the abdomen and kidney sizes were either normal or bulky. None of the patients had small kidneys. The important findings of the various investigations are shown in table 3.

Table 1: Showing age distribution of the patients

AGE Group (Yrs)	No of Patients	Percentage (%)
0-10	4	5
11-20	9	11.25
21-30	38	47.5
31-40	16	20
41-50	6	7.5
51-60	2	2.5
61-70	4	5
71-80	1	1.25

Table 2: Showing the presenting features of the patients

Symptoms	No of patients	Percentage(%)
Systemic symptoms	64	80%
Pedal oedema	56	70%
Hypertension	52	65%
Oliguria	40	56.25%
Hematuria	30	37.5%
Joint pain	26	32.5%

Table 3: Showing reports of various investigations

Investigation	No of Patients	Percentage (%)
Albuminuria	80	100
Active Urinary Sediments(RBC, RBC Cast)	65	81.25
deranged (RFT)	80	100
ANA, dsDNA	30	37.5
ANCA	1	1.25
ASO Titre	7	8.75
Complement Level	37	46.25
Serum electrophoresis for M band	6	7.5
USG (Normal size / bulky kidneys)	80	100

For histological diagnosis all patients were subjected to renal biopsy. The most common histological diagnosis was lupus nephritis (LN), found in 30 patients (37.5%) of which 16 (20%) were diagnosed with class IV , 8

(10%) with class III+V and 6 (7.5%) patients with class III .The next common histological diagnosis was IgA nephropathy in 20 (25%) patients with 9 of them having the crescentic type. There were 8 (10%) patients of pauci immune glomerulonephritis and 7 (8.75%) patients of post infectious glomerulonephritis. 6 (7.5%) patients were diagnosed to have multiple myeloma of which 5 patients had cast nephropathy and 1 patients had amyloidosis. There were 4 (5%) patients each of acute interstitial nephritis (AIN) and membranoproliferative glomerulonephritis (MPGN). The cause of AIN was NSAID (Non-steroidal anti – inflammatory drug) in 3 patients and in 1 patient the cause was probably herbal medicine induced. 1 patient was diagnosed as cryoglobulinemic glomerulonephritis. The histological diagnoses are also shown in table 4.

Table 4: Showing the various histological patterns

Histological patterns	No of Patients	Percentage (%)
SLE - LN	30	37.5
Class III	6	7.5
Class IV	16	20
Class III + V	8	10
IgA Nephropathy	20	25
Pauci-immune GN	8	10
PIGN	7	8.75
Multiple Myeloma	6	7.5
Cast nephropathy	5	6.25
Amyloidosis	1	1.25
AIN	4	5
MPGN	4	5
Cryoglobulinemic GN	1	1.25

Outcome of the patients

2 patients of LN, 2 of multiple myeloma and the patient of cryoglobulinemic glomerulonephritis expired. Other patients are under regular follow up.

DISCUSSION

The prevalence of biopsy proven glomerulonephritis varies according to the geographic area, socio economic condition, race, age, demography and indication of biopsy. In a study of biopsy proven renal disease over 19 years, RPRF was seen in 12% of the patients.[2]

A retrospective study from the Spanish Registry of patients with RPRF, in whom kidney biopsy was done, has shown that crescentic GN accounted for 33% cases, AIN 11% , IgA 9%, ATN 5% and LN , PIGN, myeloma kidney and TMA approximately 3 % each.[3] In another similar study in elderly patients with RPRF, crescentic GN accounted for 71% cases of RPRF and AIN 17%.[4] In an Indian study of 46 cases of crescentic glomerulonephritis , 71.7% were pauci immune and 28.3% immune complex mediated.[5] In the Italian registry , the most frequent cause of acute renal failure was necrotizing vasculitis (20.1%) followed by crescentic GN (14%) , ATIN (11.3%) and ATN (7.9%).[6,7] In a recent Indian study of children with crescentic glomerulonephritis, out of 36 children, 17 had immune complex GN and 19 had pauci immune GN. The etiologies of the former were LN (4), PIGN (3) and IgAN, HSP and MPGN type II (2 each). RPGN was present in 33 patients.[8]

In the present study, most of the patients were found to be LN followed by IgAN. This may be because majority patients were in the younger age group.

Approximately 20% myeloma patients develop progressive renal failure during course of disease.[9,10] In the study by Prakash J et al.[11] with multiple myeloma, oliguric ARF was seen in 73% patients. Renal biopsy findings in 9 patients revealed cast nephropathy in 4, amyloidosis in 3, proliferative glomerulonephritis in 1 and cast nephropathy with CIN and plasma cell infiltration in 1 patient. In the present study, out of 6 patients of multiple myeloma, 5 had cast nephropathy and 1 had amyloidosis.

CONCLUSION

The present study provides comprehensive information about the clinical presentation and pattern of kidney diseases in patients presenting as RPRF. Renal biopsy is very essential for determining the underlying pathology and for distinction between subtypes of a disease which has important implications for therapy and outcome later on. A prompt proper diagnosis of RPRF and appropriate treatment is most essential to decrease the morbidity and mortality of the patients and also prevent progression to ESRD.

REFERENCES

1. Bhowmik D, Sinha S, Gupta A, Tiwari SC, Agarwal SK. Clinical approach to rapidly progressive renal failure. JAPI Jan , 2011, Vol 59.
2. Das U, Dakshinamurty KV, Prayaga A. Pattern of biopsy proven renal disease in a single centre of South India: 19 years' experience. Indian J Nephrol 2011, Vol 21, Issue 4 , 250 -257.
3. Lopez – Gomez JM, Riviera F on behalf of Spanish Registry of Glomerulonephritis : Renal biopsy findings in acute renal failure in the cohort of patients in the Spanish registry of glomerulonephritis . Clin J Am Soc Nephrol 2008; 3: 674- 681.
4. Uezono S , Hara S , Sato Y, Komatsu H, Ikeda N , Shimao Y. Renal biopsy in elderly patients . A clinicopathological analysis. Renal failure 2006; 28: 549 –555.
5. Gupta R , Singh L , Sharma A , Bagga A , Agarwal S K , Dinda AK. Crescentic glomerulonephritis: A clinical and histomorphic analysis of 46 cases . Indian J Pathol and Microbiol 2011 , Vol 54 , Issue 3 , Pg 497 – 500.
6. Schena FP, Italian Group of Renal Immunopathology: Survey of the Italian Registry of Renal Biopsies : Frequency of the renal diseases for 7 consecutive years . NDT 12, 418 – 426 , 1997.
7. Gesualdo L, Di Palma AM, Morrone LF. Italian Immunopathology Group, Italian Society of Nephrology. The Italian experience of the national registry of renal biopsies, KI 66, 890 -894, 2004.
8. Sinha A, Puri K, Hari P, Dinda AK, Bagga A. Etiology and outcome of crescentic glomerulonephritis . Indian Pediatrics Vol 50 , March 16 , 2013.
9. Goldschmidt H, Lannert H, Bommer J. Multiple myeloma and renal failure NDT 2000, 15 ;301.
10. De Fronzo RE, Humphrey RL, Wright JR, Cooke CR. Acute renal failure in multiple myeloma. Medicine (Baltimore) 1975 ; 54 : 209 – 23
11. Prakash J, Niwas SS, Parekh A, Vohra R, Wani IA. Multiple myeloma - presenting as acute kidney injury. JAPI Vol 57, Jan 2009.

Source of Support: Nil.

Conflict of Interest: None Declared.

Copyright: © the author(s) and publisher. IJMRP is an official publication of Ibn Sina Academy of Medieval Medicine & Sciences, registered in 2001 under Indian Trusts Act, 1882.
This is an open access article distributed under the terms of the Creative Commons Attribution Non-commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

Cite this article as: Sharma M, Bordoloi P, Das HJ, Barman AK. Histopathological Pattern in Patients Presenting with Rapidly Progressive Renal Failure: A Single Centre Study. Int J Med Res Prof. 2016, 2(2); 150-53.