

ORIGINAL RESEARCH

Etiology Of Renal Lesions: A Ten Year Retrospective Study

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ABSTRACT

Introduction: Burden of disease in case of renal disorders is a proverbial ice-berg where very little is manifested and a lot remains undiagnosed. The patients present to a nephrologist when it is too late. In this context epidemiological studies are important to understand and treat renal diseases. This study was undertaken over a period of ten years at a tertiary care centre at Allahabad (India) to find out the various etiological factors in patients of renal diseases.

Material and Methods: This is a retrospective study with record retrieved from archives of pathology department of all renal cases comprising of renal biopsies and nephrectomy specimens. The histopathological diagnosis were noted and tabulated.

Results: In this study glomerulopathies constituted the commonest renal lesions accounting for 57.55%. Membranous glomerulonephritis (14.14%) was the commonest glomerular lesion and chronic pyelonephritis was common on nephrectomy specimens (20.93%).

Conclusion: End stage renal disease (ESRD), commonly seen on renal biopsies along with CPN on nephrectomy specimens (leading to dialysis dependant renal failure) is the major challenge to patients suffering from renal disorders in developing countries.

Keywords: Etiology, Histopathology, Renal Disorders.

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INTRODUCTION

Epidemiological studies help to delineate and define a disease process. They are important health indicators to measure disease and also to assess its frequency (increase or decrease over a duration) and also to understand a disease sub-classification. These studies often yield important health statistics and indicators which are used to design and implement programmes targeting a particular disease. Burden of disease in case of renal disorders is a proverbial ice-berg where very little is manifested and a lot remains undiagnosed. The patients present to a nephrologist when it is too late. In this context epidemiological studies are important to understand and treat renal diseases. In the field of nephropathology renal biopsy is considered gold diagnostic. Biochemical, serological and urine examination are ancillary investigations to help in diagnosing renal diseases.^{1,2} The present study was undertaken over a period of ten years at a single tertiary care centre in the northern part of India catering to large resource challenged population. The study also compared the findings with studies done in rest of India and the neighbouring countries of Asia and the world.

MATERIALS AND METHODS

This study was conducted on 172 patients who presented with various renal disorders. The records were retrieved from the records section of histopathology unit, Department of Pathology, M.L.N Medical College, Allahabad. Patients with suspected lesions of renal system especially the kidney, attending the outpatient department (OPD) of Medicine, Surgery and Paediatrics; S.R.N and its allied hospitals, Allahabad were included based on the inclusion criteria.

Inclusion Criteria: All renal patients cases comprising of renal biopsies and nephrectomy specimens.

Initially, ultrasound guided localisation of renal lesions was done and 4 per-cutaneous core biopsies were obtained for renal biopsies. The biopsies and nephrectomy specimens were then processed, paraffin wax blocks were prepared and sections were cut. These were then stained with Haematoxylin and Eosin, Periodic Schiff, Masson' Trichrome and Periodic

Methenamine Silver stains. Presence of 5 or more glomeruli was considered as an adequate renal biopsy.

RESULTS

This study showed that glomerulopathies were the commonest of the renal lesions constituting 55.23% of the cases. Chronic pyelonephritis took the second position with 22.09% of cases (Table 1). The age group varied between 6.0 years to 58.0 years with a male: female (M: F) ratio of 3:1. The most common renal lesion was chronic pyelonephritis (CPN) (22.09%). Membranous glomerulonephritis and renal neoplasms were the second leading cause of renal morbidity accounting for 9.30% cases each.

Membranous glomerulonephritis (MG) was commonest glomerulopathy, accounting for 16.84% of all glomerulopathies [Table-1].

The overall average age in cases of glomerulonephritis was 28.48 years. In nephrectomy specimens, CPN was the commonest lesion encountered (49.14%) followed by neoplasms (18.42%) in second position and post traumatic as well as unremarkable kidney specimens (9.58%) behind that.

The commonest renal neoplasm on nephrectomy specimens was Renal cell carcinoma (RCC) (64.28% of all neoplasms). Malignant neoplasms (92.85%) were much more commonly encountered as compared to benign neoplasms (7.14%). Clear cell carcinoma was the most common histological subtype constituting 50.00% of the cases. Wilm's tumor and papillary variant of RCC constituted 14.28% each of all renal neoplasms [Table-2].

DISCUSSION

In patients undergoing core biopsies, glomerulopathies (55.23%) were the commonest renal lesions encountered. Chronic pyelonephritis followed in second position with 22.09% cases. Renal neoplasms constituted 8.13% cases on nephrectomy specimens. These figures are in accordance with various other studies.^{2,3}

The average age of presentation in this study was between 10-30 years. Overall there was a clear male preponderance. This correlates well with similar studies done elsewhere.³⁻⁶

The commonest glomerular lesion encountered was MGN followed in second position by MPGN and MeGN in third place (16.84 %, 11.57% and 8.42 % respectively). In a similar study conducted in the same institute,, MGN was the commonest pattern of injury; hence the present study was in accordance with it. The prevalence of MGN in the present study was higher

Table-1: Subdivision of various renal lesions according to the frequency, age and sex distribution.

Lesion	Total	% of all renal Lesions	M:F	Avg. Age (in yrs)
Glomerulopathies	95	55.23	4:2	25.16
Membranous	16	9.30	4:3	22.12
Membranoproliferative (MPGN)	20	6.39	3:1	21.82
Minimal Change Disease	10	5.81	3:1	12.10
Mesangioproliferative (MEGN)	08	4.65	1:1	32.75
Diabetic nephropathy	10	5.81	2:1	40.82
Systemic Lupus Erythematosus (SLE)	06	3.48	1:3	27.75
Crescentic Glomerulonephritis	06	3.48	3:2	31.27
End Stage Renal Disease (ESRD)	06	3.48	5:3	21.22
Focal Segmental Glomerulosclerosis (FSGS)	05	2.90	2:1	22.71
Diffuse Proliferative (DPGN)	05	2.90	1:1	22.00
Amyloidosis	03	1.74	3:2	59.66
Chronic Pyelonephritis	38	22.09	2:0	30.80
Neoplasia	14	8.13	4:3	29.00
Traumatic / Normal Kidney	06	3.48	5:2	26.14
Tubercular Pyelonephritis	07	4.06	2:1	20.21
Benign Nephrosclerosis	06	3.48	3:2	59.00
Cystic Kidney Disorders	05	2.90	1:3	29.00
Xanthogranulomatous Pyelonephritis	01	0.58	0:1	19.00
TOTAL	172	100.00	3:1	24.38

in comparison with other studies. In India, MEGN is more prevalent in southern India, primary IgA glomerulonephritis is commonly seen in western India and Minimal Change Disease (MCD) in north India. MGN showed a male preponderance, which was similar to the findings of other studies.^{2,3,5-9}

There was a significantly higher prevalence of ESRD in this study. Interestingly, if diabetic nephropathy and amyloidosis kidney are added in primary ESRD, the combined ESRD then becomes the leading pattern of the glomerular injury. However, in other studies ESRD did not show such large prevalence as was shown in our study.^{8,9}

CPN comprised of 22.09% of cases in this study in nephrectomy specimens with a male dominance.

Table-2: Distribution Of Renal Tumors (1995-2004)

Neoplasia	Total	% of All Neo	% Of All Renal Lesion	M: F	Avg. Age
Benign	01	7.4	0.58	0:1	44.00
Angiomyolipoma	01	7.4	0.58	0:1	41.00
Malignant	13	92.15	7.55	3:2	30.15
Renal Cell Carcinoma	09	64.28	5.23	5:3	55.87
Clear Cell	07	50.00	4.06	3:2	52.80
Papillary	02	14.28	1.16	2:0	70.00
Wilm's Tumor	02	14.28	1.16	1:2	3.33
Malignant Fibrous Histiocytoma	01	7.4	0.58	0:1	10.00
Disseminated Lymphoma	01	7.4	0.58	0:1	61.00
Total	14	-	8.13	4:3	40.07

Among the neoplasms, there were no surprises as RCC constituted the commonest neoplasm in the nephrectomy specimens (64.28%). Mean age in this study was 57.23 years with a male preponderance. these findings correlated well with similar other studies.^{10,11}

Wilm's Tumour (WT) came second among the neoplasms (14.28%) and was expectedly seen in the paediatric age group, 3.14 years being the average age. There was female preponderance (M: F ratio= 1:2). Studies done by others corroborated these findings.^{12,13}

The only benign neoplasm diagnosed in this study was angiomyolipoma (AML) which correlated well with the findings of Steiner et al.¹⁴

CONCLUSION

This study showed a high prevalence of ESRD along with CPN. This is explained by delayed presentation to the doctor and the patient ignorance. Both of these pose a great challenge to nephrologists. Glomerular diseases are the main etiological factor, which leads to a larger number of patients suffering from renal failure, resulting in considerable mortality and morbidity.

However, this study is limited by its relatively small sample size and hence more research needs to be done with a larger sample size.

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