Original Article

SPECTRUM OF GLOMERULAR DISEASES: AN 11 YEAR RETROSPECTIVE REVIEW IN A TERTIARY CARE HOSPITAL IN PAKISTAN.

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ABSTRACT

BACKGROUND: In this study we report our experience with renal biopsy and histopathological pattern of renal disease in a tertiary care hospital in Pakistan over an 11 year period.

PATIENTS AND METHOD: All the kidney biopsies performed in our unit from Jan 2001 to Dec 2011 were retrospectively reviewed but only glomerular diseases were analyzed. We recorded the following data for each patient: name, age, sex, indications for renal biopsy, histopathological diagnosis and lab investigations such as Serum Creatinine 24 hour urinary protein, urine microscopy, virology (HbsAg, Anti HCV) and serology (anti-ds DNA, ANA, C3, C4, C-ANCA and p-ANCA) when indicated. Analysis included Light Microscopy (LM) and immunoflourescene (IF). For LM, three sections were stained with H and E.Pas and special stains were used when warranted. IF study was done using polyclonal antisera against human IgG, IgM, IgA, C3 and Cq. The renal biopsies were performed by a trained Nephrologist. Biopsies were evaluated by light microscopy and IF and also special stains were warranted.

RESULTS: A total of 310 consecutive percutaneous renal biopsies of native kidneys showed glomerular disease in 248 cases. A total of thirteen specimens were unsatisfactory. There were 125 males (50.4%) and 123 females (49.6%). Age distribution showed a total no. of 29 (11.69%) of paediatric cases, 200 (80.6%) adult cases and 19 (7.6 %) elderly cases. The most common clinical indication for renal biopsy was nephrotic syndrome (n=83 33.5%) which was followed by unexplained renal failure (n=67 27.0%). Of the total biopsies included 184 (74%.19%) had *primary glomerular disease and 64 (34.78%) had secondary glomerular diseases. The most frequently found primary glomerular leison was membranous nephropathy (27.7%) when all age groups were studied together. Membranous nephropathy was also the commonest primary glomerular pathology amongst both the adult group (23%) as well as the elderly group (21%) Lupus nephritis (60%) ranked first amongst the secondary glomerular lesions. It was followed by amyloidosis which was found in 26% of the secondary cases. The most common leison according to WHO classification was Class V Lupus Nephritis (48.7%).

CONCLUSION: Membranous Nephropathy was the most frequently found lesions in Primary glomerular diseases. Lupus Nephritis was the most common secondary glomerular disease.

KEY WORDS: Patients, renal disease, renal biopsy

INTRODUCTION

The histopathological examination of biopsied kidneys is the gold standard for the diagnosis of renal disease. Currently there is lack of long

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term data collection on the spectrum of renal diseases in Pakistan. Therefore the present study was designed to determine the histopathological profile of glomerulonephritis in a single large centre in Pakistan in the last 11 years.

PATIENTS AND METHODS:

All the kidney biopsies performed in our unit from Jan 2001 to Dec.2011 were retrospectively reviewed but only glomerular diseases were analyzed. We recorded the following data for each patient: name, age, sex, indications for renal biopsy, histopathological diagnosis and lab investigations such as S. Creatinine 24 hr urinary protein, urine microscopy, virology (HbsAg, Anti HCV) and serology (anti-ds DNA, ANA, C3, C4, C-ANCA and p-ANCA) when indicated. Renal biopsies were performed by a trained Nephrologist using a Monopty gun or a trucut needle. Specimen were subjected to only light microscopy (LM) and immunoflourescent (IF) microscopic studies. For LM, three sections were stained with Hand E.Pas and special stains were used when warranted. IF study was done using polyclonal antisera against human IgG, IgM, IgA, C3 and Cq. EM was not done as the facility is not available in our institute. Biopsy specimen were considered satisfactory for the diagnosis if they contained five or more glomeruli.

Clinical information was obtained mostly from the biopsy requisition forms and by reviewing the medical charts when available. Patients younger than 18 were classified as children and those 18 years or older were classified as adults. Patients aged sixty years were included in the elderly group.

The syndromes were classified according to the following criteria commonly used in nephrology: Nephrotic Syndrome (proteinuria greater than 3.5gm/24 hrs) Nephritic Syndrome (haematuria, hypertension and reduced renal function), asymptomatic urinary abnormalities (AUA) (haematuria with or without proteinuria and normal renal function) and unexplained renal failure.

CLINICAL DATA:

Data were analyzed using the statistical Package for the Social Sciences (SPSS) 13.0. Graphs were generated with Microsoft Excel Spread Sheet 2007.

RESULTS:

A total of 329 consecutive percutaneous renal biopsies of native kidneys were reviewed. Thirteen specimens were unsatisfactory. Nineteen samples had incomplete data, therefore were excluded. Forty nine cases had non glomerular pathology therefore were not included in the study. A total of 248 cases with glomerular pathology were included in the study.

There were 125 males (50.4%) and 123 females (49.6 %). Age distribution showed a total no. of 29(11.69%) of paediatric cases, 200 (80.6%) adult cases and 19 (7.6 %) elderly cases.

Indications for performing renal biopsy among different age groups are summarized in Fig 1,2,3) They were nephrotic syndrome (n=83 33.5%), unexplained renal failure (n=67 27.0%), nephritic syndrome (n=60) and AUA (n=38). Of the total biopsies included 184 (74%.19%) had primary glomerular disease and 64 (34.78%) had secondary glomerular diseases.

Overall Membranous Nephropathy was found to be the most frequently found primary glomerular leison when all age groups were taken together. It was also the commonest primary glomerular pathology amongst both the adult group (23%) as well as the elderly group (21%).In the Paediatric group, Mesangioproliferative Glomerulonephritis was the most frequently found primary glomerular leison. Lupus nephritis (LN60%) ranked first amongst the secondary glomerular lesions. It was followed by Amyloidosis (AML) which was found in 26% of the secondary cases. The most common lupus nephritis lesion according to WHO classification was Class V Lupus Nephritis (48.7%).

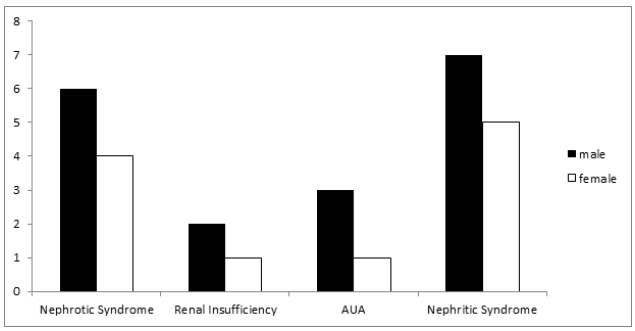

Figure1: Indications of Renal Biopsy (Paediatric Group)

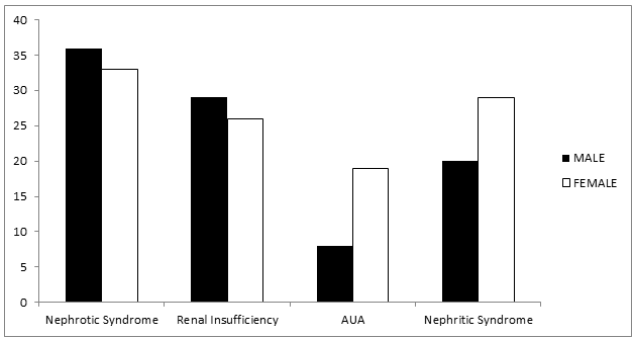

Figure2:
Indications of Renal Biopsy (Adult Group)

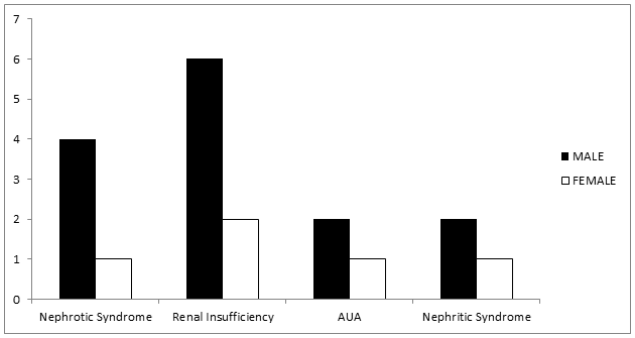

Figure3:
Indication of Renal Biopsy (Elderly Group)

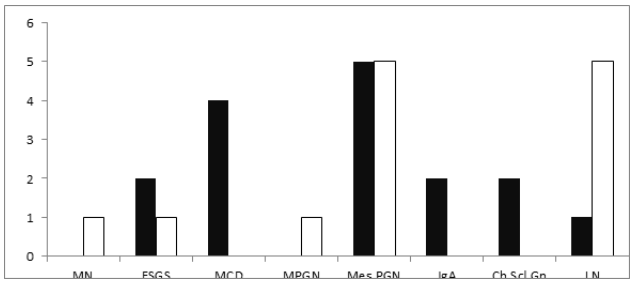

Figure 4: Histopathological Lesions on renal biopsy (Paediatric Group)

MN : Membranous Nephropathy FSGS: Focal Segmental Glomerulosclerosis MCD: Minimal Change Disease MPGN: Membranoproliferative Glomerulonephritis Mes PGN: Mesangioproliferative Glomerulonephritis IgA: IgA Nephropathy Ch.Scl.Gn: Chronic Sclerosing Glomerulonephritis LN: Lupus Nephritis

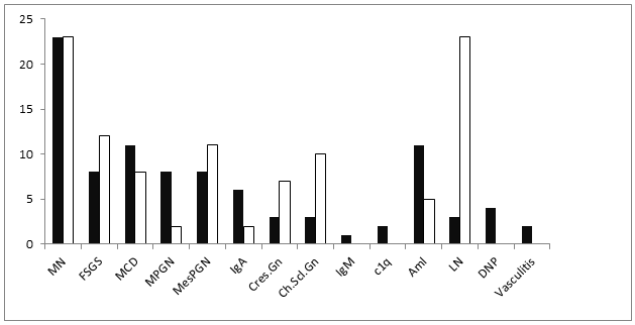

Figure 5:
Histopathological Lesions on renal biopsy (Adult Group)

Cres.Gn: Crescentic Glomerulonephritis IgM: Immunoglobulin M Nephropathy Ciq: C1q Nephropathy Ami: Amyloidosis DNP: Diabetic Nephropathy

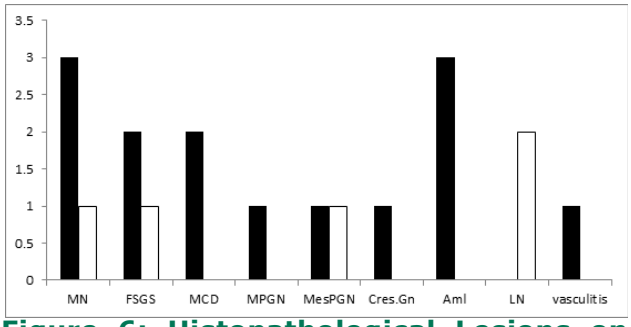

Figure 6: Histopathological Lesions on renal biopsy (Elderly Group)

DISCUSSION:

Renal pathology is clearly different in different age group and thus we have separately analyzed data from children, adults and elderly.

Our data shows that Nephrotic Syndrome was the most common clinical condition for performing renal biopsy. In children, however the nephritic syndrome is equally predominant. These findings are similar to that reported in

many countries around the world including India and Pakistan. [1,2] As expected, the incidence of renal failure increases with the age. Conversely, studies from Italy and Japan reported a higher frequency of AUA which is quite different from ours. [3S,4]

The patterns of glomerulopathy in our study differ among different age groups. Although the primary GN predominates in all age groups. Mesangioproliferative glomerulonephritis (Mes.PGN) is the most frequently encountered lesion in children followed by minimal change disease (MCD) which in contrast to regional and international data in which MCD ranked first among paediatric population. [5,6,7,8] The relatively low incidence of MCD in our study can be explained by the fact that patients with this pathology were given empirical courses of steroids first, biopsy was done only for those who did not respond, showed poor response or had frequent relapses.

MN was the most common histological pattern encountered in the adult group and accounted for 23% of cases. This is in contrast to the lower incidence of this entity in the international and regional reports.[7,8] This is also due to the fact that in most international studies, the most common clinical indication to perform a renal biopsy was AUA but when nephrotic syndrome patients were taken MN ranked first followed by FSGS similar to our study in which FSGS was second only to MN.[11]. There is low incidence of Immunoglobulin A (IgA nephropathy) in our study. Similar reports from neighboring countries as U.A.E. [12] S.A. [13] Behrain [14] Iran [15] demonstrated lower rates among primary GN in contrast to reported rates from Europe[16] USA [17] Brazil [18] and Far East countries [19,20] where IgA nephropathy is one of the leading causes of GN. Again this may reflect environmental influence or different habitual or genetic factors. Diabetic Nephropathy (DNP) constitutes a very small proportion of renal biopsies simply because most of the diabetics with renal disease are not biopsied.

CONCLUSION:

Our findings show high prevalence of membranous nephropathy in comparison to most regional and international studies. At the same time there is relatively low prevalence of IgA nephropathy as compared to other Asian countries. There is need of more prospective studies on glomerular diseases in our country to confirm or negate these findings. Also there is a need for the prospective studies in the form of national renal biopsy registry for the results of renal biopsies. Such system would be more helpful for the better understanding of the types of renal disease in Pakistan.

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Submitted for publication: 00.00.0000
Accepted for publication: 00.00.0000

Unfortunate is he who cannot gain a few sincere friends during his life and more unfortunate is the one who has gained them and then lost them (through his deeds).

Hazrat Ali (Karmulha Wajhay)