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Research Article

Pattern of Glomerular Diseases in Bangladeshi Children: A Clinico-Pathological Study

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Abstract

Background: Glomerular disease pattern varies in different countries, in different ethnic groups and in the same country with time. As there is limited data regarding this and some previous data was dissimilar from the other neighboring and remote countries, we aimed to evaluate the pattern of glomerular disease on clinicopathological aspect.

Method: We retrospectively reviewed the clinical records of 300 patients aged 3 months to 16 years with glomerulonephritis for a one year period from September 2013 to August 2014 admitted in the Department of Pediatric Nephrology, Bangabandhu Sheikh Mujib Medical University, Dhaka. Renal biopsy was done in selected patients with indications percutaneously. Tru-cut biopsy needle was used and specimen were evaluated by light and immunofluorescence microscopy.

Results: Total 300 patients with GN, mean age was117.3 months (median 15months -156 months) of whom 68% were male. Nephrotic Syndrome was the most common presentation (77%) other important presentations were AGN (17%)and Lupus nephritis (1.7%). Renal biopsy was done in 65 patients and MesangialprolifrativeGN (MesPGN) was the predominant finding (32%), followed by Minimal change disease (MCD) in 10%, Membranoproliferative GN (MPGN) in 9%, Focal segmental glomerulosclerosis (FSGS) in 6%, acute proliferative GN in 7%, cresentic GN in 5% and Ig A deposition in 6%. biopsy specimen was inadequate in 9.9% patients.

Conclusion: Nephrotic syndrome was the most common glomerular disease in this study, followed by AGN and Lupus nephritis. MesPGN was the most common histo-pathologic pattern. The low incidence of FSGS in this study is not comparable with reports from other parts of the world.

Keywords: *glomerular disease, children, Mesangial proliferative glomerulonephritis*

Introduction

Glomerular disease is a common cause of endstage renal disease (ESRD) in both developing and developed countries [1]. The pattern of glomerulonephritis (GN) varies widely from country to country and even from region to region within a country, reflecting the possible effects of socio-economic, genetic and environmental factors as well as nephrology practice and facilities available in that locality [2]. It constitutes an important cause of morbidity and mortality which imposes a considerable burden on the already strained health services in developing countries [3]. The pattern of GN is not well documented in Bangladesh. Very few studies have been performed in this regard. An epidemiological study at the national scale is not available yet. The final diagnosis of renal disease, associated with acute renal failure, nephritic syndrome or the nephrotic syndrome, is made possible with the study of renal biopsy using light microscopy (LM), immunofluorescence (IF) and electron microscopy (EM) [4]. Findings in biopsies from patients with chronic renal failure are generally nonspecific and renal biopsy is rarely indicated. Ideally, the three techniques of LM, EM and IF should be used for every renal biopsy. However, EM is expensive and is often not available in developing countries like ours. The combination of LM and IF can diagnose most of the common glomerular diseases encountered in clinical practice and is cost effective. We used these two methods to determine the pattern of glomerulonephritis. The current study was performed to show the frequency of occurrence of primary and secondary GN observed in a tertiary care hospital in Dhaka, Bangladesh.

Materials and Methods

Three hundred children with glomerulonephritis were reviewed retrospectively from clinical records over a period of one year from September' 2013 to August' 2014 in the department of Pediatric nephrology, Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh. Patients with congenital nephrotic syndrome (age of onset<3months) were excluded from the study. Renal biopsy was performed in selected patients with definite indications. Indications

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for renal biopsy were steroid resistant nephrotic syndrome, nephrotic syndrome with atypical presentations like age of onset <2 years or >8 years, nephrotic syndrome associated with gross hematuria, impaired renal function, hypo-complementemia or persistent hypertension, nephrotic syndrome due to secondary causes, rapidly progressive glomerulonephritis(RPGN) and some cases of post infectious acute glomerulonephritis(AGN) showed delayed resolution. After describing the whole procedure and all the risks and benefits, a written consent was taken from the legal guardians. All biopsies were performed percutaneously by true cut biopsy needle and examined using a light microscope (LM) and immunofluorescence (IF) and were categorized as per the World Health Organization classification by our histopathologist.

Results

Total 300 patients were admitted with different glomerular diseases with mean age 117.3 months (median age 54-156 month) of whom 203 were male 68% (Table-I). Nephrotic syndrome was the most common presentation and occurred in 232 patients (77%) of which first attack was predominant (44%), followed by steroid dependent nephrotic syndrome(SDNS) 14%, frequent relapse nephrotic syndrome (FRNS) 12%, infrequent relapse nephrotic syndrome (IFRNS) 10%, steroid resistant nephrotic syndrome (SRNS) 12% and inadequate data in 8% cases (Table-II). Acute glomerulonephritis was found in 51 patients (17%) of which 6 patients presented with rapidly progressive glomerulonephritis (RPGN).

Henochscholeinpurpura (HSP) found in 10 patients, IgA nephropathy in 2 patients, Alport syndrome in 2 patients and systemic lupus erythematosus (SLE) nephritis in 5 patients. Renal biopsy was done in 65 patients and Mesengial proliferative GN (MesPGN) was the predominant finding (32%), followed by Minimal change disease (MCD) in 10%, Membranoproliferative GN (MPGN) in 9%, Focal segmental glomerulosclerosis (FSGS) in 6%, acute proliferative GN in 7%, cresentic GN in 5% and Ig A deposition in 6%. Other pathology present were IgM nephropathy, Chronic GN, Diffuse mesangiosclerosis, Membranous nephropathy and acute tubular nephropathy (Table-III). In SLE 3 patients had type IV and one patient had type II nephritis. Biopsy specimen were inadequate in 11 cases.

Two HBsAg positive patients had membranous and membranoproliferative nephritis.

Discussion

The current retrospective study demonstrates that the mean age of presentation is 117.3 months which is a well-established data as per text [5]. Male is predominant than female. It is observed in many studies including study from India by Mutalic PP et. Al [6], Soudi-Arabia1 and Sudan [4]. This similarity might be due to most of the cases are nephrotic syndrome and male to female ratio in nephrotic syndrome and other GN except SLE, there is male predominance.

Table-I: Sex distribution of the study subjects (n=300).

Variable	Number	Percentage
Male	203	68%
Female	97	32%

Table-II: Clinical pattern of glomerular diseases in the study subjects (n=300).

Disease	Number	Percentage
Nephrotic syndrome	232	77%
Acute GN	51	17%
HSP	2	0.7%
IgA Neohropathy	2	0.7%
SLE nephritis	5	1.7%
Others	8	2.9%

Table-III: Histological pattern of glomerular diseases of the study subjects (n=65).

Types	Percentage
MesPGN	42%
MCD	10%
MPGN	9%
Acute proliferativel GN	7%
FSGS	6%
Ig A deposition	6%
Crescentic GN	5%
Others	15%

It has been observed in the present study that, MesPGN is the most common (42%) histological variant of glomerular pathology. We found similar result in our previous study where 47.5% of the biopsy findings in atypically presented nephrotic syndrome cases were MesPGN. [7] Mesengial proliferation has geographical and ethnic variation. Though MesPGN is not a predominant glomerular lesion in childhood nephrotic syndrome in different studies but in certain published data from Egypt, Turks, Iran, Jordan and some parts of Africa it encompassed a significant share of renal histology in childhood glomerular diseases. [8-12] Majority of the recent studies from different western countries and also in some South East Asian countries like India and Pakistan showed increasing incidence of FSGS. [13-22] In this study FSGS consisted only in 6% cases, similar results we found in our previous study where it was 4% in atypically presented nephrotic syndrome. [7] The low number of SLE cases (1.7%) in our series is due to there is a separate Pediatric Rheumatology Department and SLE clinic in this institution.

IgA nephropathy was reported in only 6% in this study. Similar reports obtained from the neighboring country India, but different from reports from Europe [18] where IgA is the leading cause of glomerular disease, also like USA [19], Brazil [20] and the Far East [21,22].

Conclusion

The current study concluded that nephrotic syndrome was the most common glomerular disease, followed by AGN and HSP. MesPGN remains the most common histo-pathologic pattern. The low incidence of FSGS in this study is not comparable with reports from other parts of the world.

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