

A Study on Clinico Pathological Spectrum of Nephrotic Syndrome in Adult Patients in a Teaching Hospital in Eastern India

Anirban Sarkar¹, Faizanul Haque²

ABSTRACT

Introduction: Nephrotic Syndrome is one of the important causes of end stage renal diseases in adult patients worldwide. Current research aimed to study prospectively the clinico-pathological spectrum of glomerular disease pattern in adult nephrotic syndrome patients in a teaching hospital in Eastern India.

Material and Methods: This non randomised prospective study was conducted on 72 indoor patients in the Department of Medicine presenting with nephrotic range of proteinuria (≥ 3 gm/24 hours) at a teaching hospital during the period of July 2016 to April 2018. Adult patients (≥ 18 years) with proteinuria ≥ 3 gm/24 hours were included in the study whereas patients with coagulopathy, contracted kidney, drug induced and iatrogenic nephropathy, unilateral solitary kidney, acute pyelonephritis, vesico ureteric reflux and eGFR < 15 ml/min/1.73m² were excluded.

Result: Out of 72 cases studied 48 were male mostly in the age group between 18 to 50 years presented with edema (100%), oliguria (8.3%), hypertension (36%), diabetes (25%), dyslipidemia (70%), hematuria (35%), anemia (65%), hypocomplementemia (10%) and active urinary sediment (27.8%). TSH were normal in all cases and none was reactive to viral markers (HBsAg, Anti HCV antibody, HIV 1 and 2 antibody). 22% cases had renal insufficiency (Sr.Cr > 1.4 mg/dl).

Conclusion: Primary Glomerulonephritides commonly MGN were found in majority of cases.

Keywords: Adult Nephrotic Syndrome, MGN, FSGS, Lupus Nephritis, Renal Biopsy, MCD, Light Microscopy, Immunofluorescence, Amyloidosis.

INTRODUCTION

Nephrotic syndrome is a clinico - biochemical condition consisting of heavy proteinuria and hypoalbuminaemia associated with dyslipidaemia, edema, hypertension and minimal hematuria. It is frequently complicated with increased susceptibility to infections, thromboembolism, altered carbohydrate and lipid metabolism and loss of binding proteins in urine and resultant endocrinopathy. Underlying common pathology of damage to glomerular basement membrane and selective proteinuria can be readily diagnosed in the modern era of percutaneous biopsy combined with sophisticated electron microscopy and immunofluorescence study. Though Nephrotic Syndrome is commonly found in Paediatric group of patients but it contributes a significant burden to the adult age group also. Despite considerable advances in health care, glomerular disease constitutes one of the leading causes of renal failure resulting in

considerable morbidity and mortality. The patterns of the glomerular diseases are different in different countries and are changing with time within the same country, probably due to better infection control, changes in environmental pollution, increased awareness of the disease and changes in life expectancy. The purpose of this study was to analyse the spectrum of nephrotic syndrome in adult patients in Eastern India.^{1,2}

Study aimed to observe the clinical profile of adult patients with nephrotic syndrome, to analyse the biochemical parameters of these patients, to determine the underlying pathological spectrum with renal biopsy and to observe presence of associated co morbidities

MATERIAL AND METHODS

A non randomised prospective study was conducted on 72 indoor adult patients (age > 18 years) with nephrotic range of proteinuria (≥ 3 gm/ 24 hours) in a teaching hospital in Eastern India during July 2016 to April 2018. They undergone detailed clinical examination and biochemical investigation (serum creatinine, BUN, LFT, CBC, Lipid Profile, TSH, HBsAg, Anti HCV antibody, HIV 1 and 2 antibody, vasculitis profile (ANA, pANCA, cANCA, RF), serum complement factor (C3 and C4), serum protein electrophoresis and complete urinalysis). UPCr as an alternative of 24 hours quantitative urinalysis was done in oliguric patients. We excluded patients with coagulopathy, contracted kidney, drug induced and iatrogenic nephropathy, unilateral solitary kidney, acute pyelonephritis, vesico ureteric reflux and eGFR < 15 ml/min/1.73m². Percutaneous renal biopsy for light microscopy and immunofluorescence studies were done under real time USG guidance in all patients after informed consent and in presence of professional back-up. Only biopsy specimens containing four or more glomeruli were considered appropriate. In all cases, a minimum of 20 sections were obtained and stained with hematoxylin-eosin, periodic acid-Schiff (PAS), trichrome and Jones' Silver stain.

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Clinical parameters used in this study were WHO definition for anemia (< 13 gm% in males and < 12 gm% in females), JNC-IX criteria for Hypertension (≥ 130 mm of Hg SBP and/or ≥ 80 mm of Hg DBP), nephrotic range proteinuria by ISN-RPS group (≥ 3 gm/ 24 hours), hematuria (> 5 RBC/ HPF), dyslipidaemia by AACE 2017 guidelines and Oliguria (urine output < 400 ml/ 24 hours).

STATISTICAL ANALYSIS

Data collected, statistically analysed and represented on frequency distribution graphs and figures accordingly.

RESULTS

Out of 72 adult patients (age>18 years) admitted with nephrotic range of proteinuria 48 were males (67%)

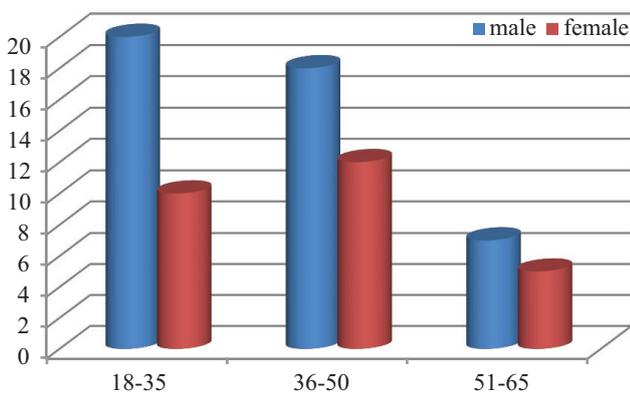


Figure-1: Age Distribution

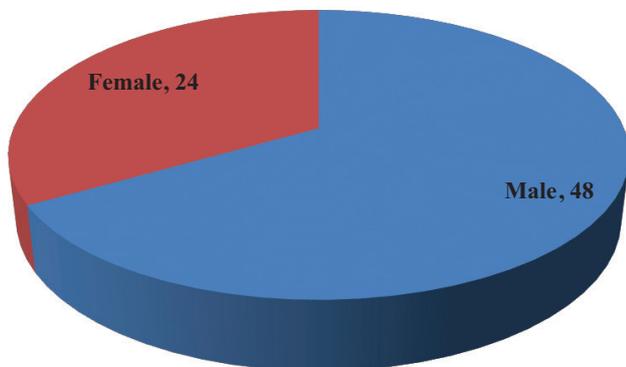


Figure-2: Sex Distribution

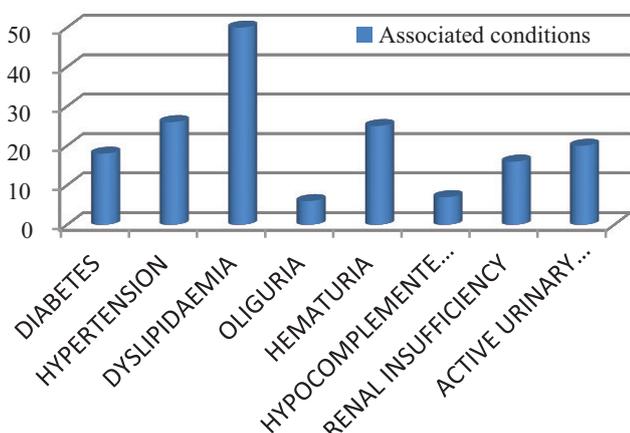


Figure-3: Symptomatology Distribution

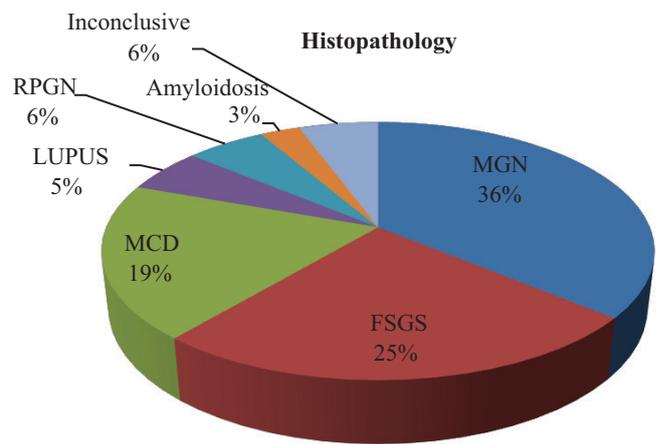


Figure-4: Histopathology Distribution

(figure-2). Most common age group was in between 18 to 50 years (figure-1). All patients had edema and 26 patients (36%) had hypertension. Diabetes was present in 18 patients (25%) and dyslipidaemia in 50 (70%), Anemia in 46 (65%), hematuria in 25 (35%), oliguria in 6 (8%), active urinary sediment in 20 patients (28%) and hypocomplementemia in 7 (10%) patients (fig-3). No patient had abnormal TSH value or reactivity to viral markers (HBsAg, Anti HCV antibody, HIV 1 and 2 antibody). 16 patients had (22%) renal insufficiency (Sr.Cr >1.4 mg/dl).

As per the findings of the light microscopy and immunofluorescence studies 26 patients (36%) had MGN. FSGS was found in 18 patients (25%) and MCD in 14 patients (20%). Others etiologies were found as lupus nephritis in 4 patients (5.5%), RPGN in 4 patients (5.5%), renal amyloidosis in 2 (3%) and inconclusive in 4 patients (5.5%) (fig-4). So, MGN was found to be the most common etiology in our study. These results were prospectively analysed and graphically represented accordingly.

DISCUSSION

Most cases of nephrotic syndrome appear to be caused by primary kidney disease.¹ Membranous nephropathy and focal segmental glomerulosclerosis (FSGS) each account for about one third of cases of primary nephrotic syndrome; however, FSGS is the most common cause of idiopathic nephrotic syndrome in adults.² Minimal change disease and (less commonly) immunoglobulin A (IgA) nephropathy cause approximately 25 percent of cases of idiopathic nephrotic syndrome.² Other conditions, such as membranoproliferative glomerulonephritis, are less common. FSGS accounts for approximately 3.3 percent of new cases of end-stage renal disease.² A large number of secondary causes of nephrotic syndrome have been identified with diabetes mellitus being the most common.

The present study was conducted in patients admitted in the medical wards of Department of Medicine in a tertiary care teaching hospital in Eastern India who were of > 18 years of age. The Demographic profile of the adult patients who presented with nephrotic range proteinuria was studied which revealed that, 67% of the patients were males and the most common age of presentation was between 18 to 50 years

(range was 18–65). At the time of presentation, Edema was seen in 100% cases while 36% had hypertension and 35% had microscopic hematuria. Anemia was found in 65% cases. 8% patients were oliguric and active urinary sediment were found in 27.8% cases. 75% subjects had dyslipidaemia. Hypocomplementemia was present in 10% patients and 22% had renal insufficiency. In a study by Haraldsson et al.¹ also showed that there is male predominance in the occurrence of nephrotic syndrome in adults. In a study by Javed Iqbal Kazi et al.², a total of 316 adult patients were studied. Of these, 201 (63.6%) were male and 115 (36.4%) were female. The present study included subjects > 18 years of age. Majority of the patients were in the age group of 18 – 50 years 85%. The age range was from 18–65 years. In a study by Kazi IK et al.², a total of 316 adult patients were studied and the mean age at presentation was 28.4 ± 10.51 years with a range of 16–78 years. Naini EA et al.³ analyzing the biopsy results among adult glomerulonephritides in Tehran from 1998-2001, found mean age of presentation being 33.6 ± 15.7 years. A study by Hopper et al.⁴ has found MCD to have a fairly high incidence in adult cases. In comparison, we found at least 20% cases with MCD. In Joon Choi et al.⁵ found that the most common primary GN among adults being MCD (26.6%) in their biopsy studies in Korea. In contrary we found MGN to be the most common etiology (36%). Also in India, a study conducted to identify the spectrum of renal diseases in Indian adults (Agarwal SK, Dash)⁶ revealed that among the nephrotic syndrome cases primary glomerulonephritides was seen in 58.5% cases and of which minimal change disease (MCD) was the commonest cause in 38% of cases. In our study, more than 85% cases had primary glomerulonephritides amongst which 34% had MGN, FSGS in 25% and MCD in 20%. Studies by Dragovic et al.⁷ and Braden GL et al.⁸ found that FSGS was increasing in incidence in both white as well as black patients. Regarding the outcome of the different glomerular diseases, FSGS had a fairly high progression rate to end-stage renal disease (ESRD) among primary glomerular disease, while diabetes had a high incidence of ESRD among secondary glomerular disease.

Naini EA. et al.³ analyzing the biopsy results among adult glomerulonephritides in Tehran from 1998-2001 and Jalalah SM⁹ in his study of primary glomerular diseases in adults of Saudi Arabia, found that MGN was the most common GN contributing to 23.6% and 25.7% cases respectively. Studies by Riabov et al.¹⁰ (1986), Medawar et al.¹¹ (1990), Anuradha et al.¹² (1997) showed the incidence of MGN among adult cases being 25%, 28% and 30% respectively. In the current study, 26 out of 72 had MGN i.e., contributing to about 36% of the total cases. This corroborates with above studies. Current study is in contrast with Braden et al.¹³ where there was a decrease in relative frequency of MN - 38.3% during 1975 to 1979 to 14.5% during 1990 to 1994. No patient of Membranoproliferative glomerulonephritis (MPGN) were found in our study. Riabov et al. (1986)¹⁰ found out in his study that MPGN contributed about 31% of cases of adult nephrotic syndrome. The incidence of MPGN has been on

the declining trend. It has been shown from the studies of Medawar et al. (1990)¹¹ and Anuradha et al. (1997)¹² where MPGN found around 17% and 10% respectively. Mitwalli et al.¹⁴, reported that the incidence of MPGN among primary glomerular diseases in Saudi Arabia was 1.4%. Similarly Korbet et al.¹⁵, in their study reported that the incidence was 2%. In this study 5 patients were diagnosed with lupus nephritis where all cases were females. Naini et al.³ have found that Lupus nephritis contributed around 10.6% of cases of adult glomerulonephritides. Studies in Saudi Arabia by Mitwalli et al.^{14,16} have shown that amongst the secondary glomerular diseases, Lupus nephritis was the most prevalent. Renal Amyloidosis was the outcome in 2 out of 72 cases. The kidneys are the most common organ to be involved in AL amyloid and most patients with AL amyloid eventually have amyloid in their kidneys as shown on autopsy.¹⁷ The incidence of AL amyloid is about 8 per million annually. Males are affected twice as often as women.¹⁸ Additionally, in our study 4 patients had RPGN and in 4 patients there was inconclusive results.

CONCLUSION

This study prospectively analysed the clinical, biochemical and histopathological spectrum of 72 cases of adult nephrotic syndrome in a tertiary care centre in Eastern India. Primary glomerulonephritides commonly MGN were found in majority of cases. This study emphasises renal biopsy under real time USG guidance in all cases of nephrotic syndrome because of the high prevalence in steroid resistance in MGN and FSGS.

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