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Nephrotic Syndrome: Clinico-Histopathological Spectrum in geographical region of Kerala, India

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Abstract
The nephrotic syndrome is a clinical syndrome complex characterized by a number of renal and extrarenal features. The main aim of the present study was to evaluate the recent changes in the epidemiology and histopathological profile of the disease causing Nephrotic syndrome. Methods: The study was conducted on 44 patients who were presented with the nephritic syndrome. Results: Of the 44 patients studied FSGS and MCD were the more commonest nephrotic syndrome. The symptoms like microhematuria, oliguria, hypertension, hypoalbuminemia, renal failure, anemia and hyperlipidemia were seen in the patients affected with nephrotic syndrome. Further, the clinicopathological correlation was present in 59.1% of patients. Conclusion: Thus, IgA nephropathy and Minimal change disease were the most common histopathological subtypes.

Keywords: nephrotic syndrome, oliguria, anemia, histopathological correlation

Introduction
Nephrotic syndrome (NS) is characterized by substantial loss of protein in urine (primary albuminuria) leading to hypoproteinemia (especially hypoalbuminemia) and it result: edema, hyperlipidemia, hypercholesterolemia and increased lipiduria are usually associated. There is no precise, generally accepted definition that defines the extent of proteinuria or hypoalbuminemia required for the syndrome [1]. In studies of nephrotic syndrome, the nephrotic proteinuria has been variably defined as >3gm/24 hrs or >3.5g/24 hrs. Most studies have relied on edema as a manifestation of NS and have not strictly defined hypoalbuminemia [2, 3]. Based on animal models etc, edema is thought to characteristically develop when serum albumin falls below 3gm/dl. However the presence of edema is variable even when the serum albumin is below 3gm/dl [4, 5]. Although not commonly thought as a part of syndrome, hypertension, hematuria and azotemia may also occur. NS is usually due to a glomerular disease and is currently categorized into primary and secondary forms. The primary NS (PNS) or idiopathic NS (INS) both terms denote a similar vagueness as to cause is not associated with any underlying disease. Glomerular disease is most common form of renal disease and can have many different clinical presentations. It presents usually as nephrotic syndrome, rapidly progressive renal failure, acute kidney injury, microscopic hematuria, chronic kidney disease and recurrent disease in the post transplant kidney [6].
In this scenario, the present study is conducted to evaluate the recent changes in the epidemiology and histopathological profile of the disease causing Nephrotic syndrome in this particular geographical region, Thrissur, Kerala, there by the outcome and prognosis can be predicted to some extent and the same knowledge can be exploited in the management of patients with Nephrotic syndrome.

Patients and Methods
The present study was carried in 44 patients were recruited who were admitted with features of primary nephrotic syndrome of age greater than 12 years in Government Medical College, Thrissur for a period of 1 year.

Inclusion criteria: The patients with age greater than 12 years and with signs & symptoms of nephrotic syndrome were included in the study.

Exclusion criteria: The patients who exhibits the following criteria were excluded from the study, systemic diseases where renal biopsy is not planned, patients with bleeding diathesis, uncontrolled severe hypertension, presence of a solitary native kidney, anatomical abnormalities of the kidney, skin infection at the desired biopsy site, pregnancy and urinary tract infections where renal biopsy is contraindicated and Patients in whom immunoflouresent study of the renal biopsy is not done

Methods
Past history of diabetes, hypertension, chronic kidney disease, history of chronic drug intake, history of previous episodes of hematuria, generalized edema, oliguria, and any previous admission was taken. A complete physical examination including vitals, general examination, cardiovascular system, gastrointestinal system, genitourinary system, respiratory system, central nervous was done.
Biochemical assessments including blood routine, urine routine, Random blood sugar, Renal function test, Liver function test, serum electrolytes- sodium, pottasium,24 hour urine protein or urine protein creatinine ratio, ultra sound of the abdomen to assess kidney size and to aid in renal biopsy, chest X-ray, Electrocardiogram, Serum Complement 3, Anti nuclear antibody if indicated was done.

Statistical analysis
Statistical analysis was done using EPI INFO version 7. Quantitative variables will be reported as Means +/- SD and qualitative variables as percentage and frequency. Chi square test, odds ratio are used in analysis of risk factors.

Results
In the present study, 44 patients presented with features suggestive of nephrotic syndrome. Renal biopsy was done for

all these 44 patients. Clinical and histopathological profile of these patients was studied.

In this study, majority of the patients belonged to the age group between 20 and 40 years constituting about 47.73%. The mean age of patients was 44.5 years, the maximum age was 80 years and minimum age was 13 years. Further, out of 44 patients 30 were males, 14 were females.

The patients studied were categorized into one of the five types of nephrotic syndrome which includes the following minimal change disease (MCD), focal segmental glomerulosclerosis (FSGS), membranous nephropathy, Membrane proliferative glomerulonephritis (MPGN) and IgA nephropathy (Table 1).

Of the 44 patients studied, FSGS was more common in the elderly, IgA nephropathy was common in the middle age group, MCD was not seen after 60 years. membranous and MPGN was more common in patients between the age of 20 -40 years

Table 1: Frequency of distribution of histopathological subtype

Final diagnosis	Frequency	Percent
FSGS	10	22.73%
IgA	14	31.82%
MCD	14	31.82%
Membranousn Nephropathy	3	6.82%
MPGN	3	6.82%
Total	44	100.00%

Regarding, nephrotic syndrome the oliguria was present in 24 patients and it was highly prevalent in FSGS histological subtype.

Microhematuria was observed in 24 patients and the IgA nephropathy was the most common histopathological subtype associated with hematuria.

In the present study, out of 44 patients studied hypertension was present in 29 patients. The common histopathological subtype associated with hypertension was IgA Nephropathy followed by focal segmental glomerular sclerosis.

In the present study, the haemoglobin level was > 10% is most of the patients (26 cases). Further, FSGS and IgA nephropathy was associated with haemoglobin less than 10 g%. Meanwhile, Pearson correlation reveals negative correlation hemoglobin and serum creatinine.

In this study, out of 44 patients severe hypoalbuminemia was observed in 24 patients.

The association of renal failure with different histopathological subtypes was analyzed. The results were that FSGS, MPGN, IgA nephropathy was associated with renal failure whereas renal failure is rare in MCD, only one patient with MCD was found to have renal failure (Table 2).

Table 2: Renal failure in patients with different histological subtypes.

Renal failure	FSGS	IGA	MCD	Membranous nephropathy	MPGN	Total
Present	9	13	1	2	3	28
Absent	1	1	13	1	0	16
Total	10	14	14	3	3	44

In the present study, 47.73% of patients had total cholesterol value between 200-300 mg/dl, 43.18% were in the range between 300-400 mg/dl, and 3.09% had cholesterol values greater than 400 mg/dl. The mean total cholesterol value was found to be 312.77 mg/dl, Further, The most common subtype associated with higher levels of cholesterol was minimal change disease. Further, there was a negative correlation between serum albumin levels and total cholesterol.

Further, the clinicopathological correlation was present in approximately 59.1% and absent in 40.9%..Of the cases with histopathological diagnosis as FSGS, only 8 were clinically predicted as FSGS. Out of the 14 cases with histopathological diagnosis as IgA only 8 were clinically predicted as IgA. Out of the 14 MCD cases 5 cases were clinically predicted to have minimal change disease. Clinicopathological correlation was complete in patients with membranous all three cases of membranous nephropathy was predicted clinically as membranous nephropathy (Table 3).

Table3: Clinicopathological correlation of nephrotic syndrome in the present study

Clinical Diagnosis	FSGS	IgA	MCD	Membranous nephropathy	MPGN	Total
FSGS	8	6	1	0	0	15
IgA	2	8	0	0	0	11
MCD	0	0	5	0	0	5
MEM	0	0	8	3	0	11
MPGN	0	0	0	0	3	2
Total	10	14	14	3	3	44

Discussion

The present study was undertaken to analyze the clinical and histopathological profile of primary nephrotic syndrome and to evaluate the clinical and histopathological correlation.

In this study we analyzed 44 cases of age varied from 20 to 40 years with a mean age of 44.50 years. The result is in line with the other study conducted by Ganesh *et al.* where the mean age was 39 years [7].

In this study the most common subtypes were MCD and IgA accounting for 31.82% (14 patients) each, followed by FSGS -22.73%, membranous and MPGN – 6.82%. This is in contrast to other studies were FSGS is more common. In the study conducted in Rathi *et al.* FSGS was the most common subtype followed by MGN and DPGN [8].

Patients with nephrotic syndrome do not actually present with oliguria. Since this study included substantial patients with IgA nephropathy oliguria was present in a significant number of patients accounting for approximately in 52.27%. The most common histological type associated with oliguria was FSGS and IgA nephropathy. The results are in line with the previous study where the oliguria was the predominant symptom associated with nephritic syndrome [10].

In this study microhematuria was seen in 50% of the patients. The most common histopathological subtype associated with hematuria was IgA nephropathy which was present in 14 patients of the total 44 patients studied. In a study conducted in United States in adolescents, 56 patients presented with gross hematuria in that IgA was the most common subtype about 52% of patients presenting with hematuria. This is in accordance with our study [11].

Among the different entities causing primary nephrotic syndrome, anemia is seen in MPGN, IgA and sometimes FSGS. In nephrotic patients anemia can be aggravated by urinary losses of erythropoietin, transferrin and iron [12]. In this study clinicopathological correlation was present in 59.09% of cases.

Thus in conclusion, IgA nephropathy and Minimal change disease were the most common histopathological subtypes.

This proves that, there is considerable demographic variation in the distribution of nephrotic syndrome in different geographical regions. Clinico-Histopathological correlation is present in only 59.09% of patients in our study, hence renal biopsy should be performed in all adult patients with nephrotic syndrome for appropriate management, assessing prognosis and further follow up.

References

1. Safaei A, Maleknejad S. Spectrum of childhood nephrotic syndrome in Iran: A single center study, indian journal of nephrology. 2009; 19:87-90.
2. Gupta K. Distribution of pathologic findings in individuals with nephrotic proteinuria according to serum albumin. Nephrol Dial Transplant. 2008; 23(5):1595-9.
3. Marcel Dekker. The Nephrotic Syndrome. New York: Dekker, 1988.
4. Haas M, Meehan SM, Karrison TG, *et al.* Changing etiologies of unexplained adult nephrotic syndrome: a comparison of renal biopsy findings from 1976–1979 and 1995–1997. Am J Kidney Dis. 1997; 30:621-631.
5. Burgstein JM. Nephrotic syndrome. In: Behrman RE, Kliegm/dlan RM, Jenson HB, editors. Nelson Textbook of pediatrics. 18th ed. Philadelphia: Saunders WB. 2008; pp. 2430-42.
6. Falk JR, Jennette JC, Nachman PH. Primary glomerular disease. In: Brenner BM, Levine SA, editors. The Kidney. 7 th ed. Philadelphia: Saunders WB. 2004. pp. 1295-307.
7. Ganesh K, Nair RR, Seethalekshmy NV, Kurian G, Mathew A, Sreedharan S, Paul Z. A study of clinical presentation and correlative histopathological patterns in renal parenchymal disease. Indian J Nephrol 2018; 28:28-34.
8. Rathi M, Bhagat RL, Mukhopadhyay P, *et al.* Changing histologic spectrum of adult nephrotic syndrome over five decades in north India: A single center experience. Indian J Nephrol. 2014; 24(2):86-91.
9. Singh GK, Singh SN, Niroula D, Singh lY, Debnath K, Sharma RL. Clinicopathological correlation in primary nephrotic syndrome. J Med Soc. 2014; 28:180-4
10. Yusuf M, Das BB, Shaha AC, Hossain M. Histopathological types in adult nephrotic syndrome. Saudi J Kidney Dis Transpl. 2016; 27:576-80.
11. Hogg RJ1, Silva FG, Berry PL, Wenz JE. Glomerular lesions in adolescents with gross hematuria or the nephrotic syndrome. Report of the Southwest Pediatric Nephrology Study Group. Pediatr Nephrol. 1993; 7(1):27-31.
12. Vaziri ND. Erythropoietin and transferrin metabolism in nephrotic syndrome. Am J Kidney Dis. 2001; 38(1):1-8.