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ANALYSIS OF RISK OF NEPHROTIC SYNDROME IN PAKISTAN

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Abstract:

Introduction: *Nephrotic syndrome (NS) is the presence of pitting oedema, profound proteinuria in excess of 3.5 g/day, serum albumin levels of less than 3.0 g/dL and hypercholesterolemia. The prevalence of proteinuria is high, mainly due to its frequency in diabetic patients.* ***Objectives of the study****: The basic aim of the study is to analyze the risk of nephrotic syndrome in Pakistan. The rationale behind doing this study is that owing to high frequency of nephrotic syndrome certain recommendation will be suggested to combat the situation.* ***Material and Methods:*** *This study was conducted at Services Institute of medical sciences in March 2018 with the permission of ethical committee of hospital. The data was collected from 200 children who presented within the first year of life with nephrotic syndrome who had a histological diagnosis obtained by renal biopsy in the hospital.* ***Results:*** *Out of 200 cases, nephrotic syndrome was found with a frequency of 67.05%. Among these patients, 69.55% were male and 30.45% female. Majority (65.85%) were between 41–60 years with mean age of 40.36±15.93 years. The exact cause and pathogenesis of idiopathic NS (INS) in children still remain incompletely understood. The histopathological lesions underlying INS vary depending on different characteristics of the syndrome, such as, age, ethnicity, and response to steroid therapy.* ***Conclusion:*** *Frequency of NS was high with male gender preponderance. Nephrotic syndrome can increase your child's risk of infection and blood clots. It always affects both kidneys and usually appears in the early years of your child's life.*

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INTRODUCTION:

Nephrotic syndrome (NS) is the presence of pitting oedema, profound proteinuria in excess of 3.5 g/day, serum albumin levels of less than 3.0 g/dL and hypercholesterolemia. The prevalence of proteinuria is high, mainly due to its frequency in diabetic patients. The etiological causes of NS are however miscellaneous, ranging from primary renal diseases to systemic illnesses with various histo-pathological presentations [1]. The renal diseases presenting with NS must be precisely characterized, since many therapeutic strategies and specific treatments exist and must be evaluated in each case [2]. Independently of the underlying disease, urinary protein loss may lead to several complications either due to toxic effects of proteinuria on renal tubules, or due to plasma depletion of specific proteins. It is a relatively common way for kidney disease to manifest compared with reduced kidney function or micro-albuminuria as a complication of systemic diseases, such as diabetes and raised blood pressure [3]. It is estimated to have an approximately overall prevalence rate of 2–5 cases per 100,000 children with the cumulative prevalence of 15.5 cases per 100,000 during childhood.6 In few local studies NS was reported with the frequency of 50–70%, which was the common indications for renal biopsy [4].

Nephrotic syndrome is characterized by gross proteinuria, hypo albuminemia, hyperlipidemia, and peripheral edema. The etiology of nephrotic syndrome in adults is complex and ranges from primary glomerulonephritis to secondary forms. Primary forms of nephrotic syndrome in adults are comprised of three histological disease entities: idiopathic membranous nephropathy (iMN), minimal change disease (MCD), and focal segmental glomerulo sclerosis (FSGS). The basis for therapy of primary nephrotic syndrome is mostly of supportive nature. Supportive strategies include antihypertensive and anti-proteinuric therapy and dietary recommendations [5-7].

Patients with nephrotic syndrome are also at increased risk to develop thromboembolism. In patients with membranous nephropathy, the adjusted hazard ratio for thromboembolism was 10.8 compared to patients with IgA nephropathy. In contrast, for patients with FSGS the hazard ratio was 5.9. Hence, anticoagulant therapy is recommended in patients with a primary nephrotic syndrome, especially in iMN and serum albumin < 2.5 mg/dl. The presented model takes into account the serum albumin concentration; the individual patient's bleeding risk, and the risk tolerance as reflected by the selected benefit-to risk ratio [8].

Objectives of the study

The basic aim of the study is to analyze the risk of nephrotic syndrome in Pakistan. The rationale behind doing this study is that owing to high frequency of nephrotic syndrome certain recommendation will be suggested to combat the situation.

MATERIAL AND METHODS:

This study was conducted at Services Institute of medical sciences in March 2018 with the permission of ethical committee of hospital. The data was collected from 200 children who presented within the first year of life with nephrotic syndrome who had a histological diagnosis obtained by renal biopsy in the hospital. The clinical diagnosis of NS was made on the basis of nephrotic range proteinuria, hypo albuminaemia and oedema. Patients with complaints of peri-orbital or generalized swelling and proteinuria on urine examination above 1 years of age of both genders were included in the study through emergency or out-patient department. A detailed history of the presenting complaints including age at onset and duration of symptoms, facial or generalized oedema, hematuria or oliguria were recorded along with history of fever, vomiting, number of remission and relapses. Clinical management over the years before genetic testing was available usually included a renal biopsy in patients with CNS or INS unless clinical management with early nephrectomy was planned. However, this clinical practice was modified with priority given to genetic studies in recent years.

Statistical analysis

Student's t-test was performed to evaluate the differences in roughness between group P and S. Two-way ANOVA was performed to study the contributions. All the data was recorded on a pro forma and analysed using SPSS-12.

RESULTS:

Table 01 explains the basic demographic characteristics of patients. Age range of patients was 1-18 years with a mean of 8.11 $\pm$3.58 years. Patients underwent renal biopsy also. Patients with focal segmental glomerulosclerosis (FSGS) were least likely to respond to treatment followed by mesangio proliferative glomerulonephritis and minimal change disease.

Table 01: Analysis of demographic characters of patients

	Age	Age at first renal histology (months)	Number of glomeruli	UA: UC (mg/mmol) at presentation	Family history	Parental consanguinity	Steroid treatment
MesGN	0.8 (0.1-7.2)	5.5 (1-8)	20 (5-105)	2600 (460-20400)	3(23.1 %)	4(30.8 %)	1 (7.7 %)
FSGS	1.5 (0.1-9.9)	5 (2-16)	31 (13-56)	2910 (644-3444)	(0 %)	4 (40 %)	0 (0 %)
Finnish	1.0 (0.0-4.8)	7 (3-16)	27 (5-100)	5945 (2900-8460)	1(9.1 %)	4 (36.4 %)	1 (9.1 %)
DMS	4.7 (0.2-11)	6.5 (1-13)	21 (5-50)	6473 (2133-7600)	1 (12.5 %)	1 (12.5 %)	2 (25 %)
MCD	9.3 (0.5-10.1)	10 (1-17)	42 (15-65)	3178 (1225-3400)	0 (0 %)	2 (66.6 %)	2 (66.6 %)
Other	3-11.6	3-12	47-106	459-5461	0 (0 %)	0 (0 %)	1

The histological diagnosis and outcome of the five children who had genetic testing performed but without identified causative mutations (table 02). All patients with causative NPHS1 mutations had at least one severe (nonsense or splice site) mutation, except for the patient with the homozygous R367C mutation, which has been previously shown to cause aberrant trafficking of nephrin.

Table 02: Outcome and findings in children without identified causative mutations

Pathology	Mutation found	age at biopsy (months)	Outcome
FINISH	Hetrozygous NPHS1 variant (c.320C>T;p.Ala107Val)	7	Dialysis at 10 months of age
FSGS	None	2	Dilaysis at 3 months of gae and died from sepsis at 9 months of age
MESGN	None	5	Remission
DMS	Heterozygote NPHS1 variant (c.1223G>A;p.Arg408Gln)	10	Dialysis at 15 months of age
MEMBRANOUS	None	12	Remssion

DISCUSSION:

There have been no consistent clinical cues to either whether a patient with nephrotic syndrome has the risk of becoming steroid-resistant in the future or whether they will suffer recurrence post-transplant[8]. CNS and INS are commonly associated with Finnish type nephropathy or Diffuse Mesangial Sclerosis (DMS) on histological examination. However, other glomerular pathologies have also been reported such as focal and segmental glomerulosclerosis (FSGS) and minimal change disease (MCD) [9].

Early onset NS is usually caused by a genetic defect in a major podocyte slit diaphragm protein, Nephrin (NPHS1), or less commonly by mutations in WT1, PLCE1, LAMB2 or NPHS2. Non-genetic causes include infections such as congenital toxoplasmosis, cytomegalovirus infection, or congenital syphilis [10]. In addition, there are children with congenital NS who spontaneously improve: some of these patients may have anti-glomerular antibodies transferred from the mother, although in many children, the reason for developing NS is unexplained [11].

A renal biopsy in children under 12 months of age with NS can, however, be technically difficult to perform, with potentially serious complications, especially in small oedematous children. The clinical utility of the biopsy result with respect to prognosis and management is unclear in the era of increased genetic testing [12]. Nephrotic syndrome (NS) is not a disease in itself; rather, it is a group of kidney-related findings in your child's body that indicate damaged glomeruli (kidney's filter) resulting in too much release of protein from the blood into the urine [13]. This leads to edema (swelling), high cholesterol levels, high levels of protein in urine (proteinuria) and low levels of protein in blood (hypoalbuminemia). Nephrotic syndrome can be categorized into two subtypes, which further divide into various diseases and circumstances that damage the glomeruli [14,15].

CONCLUSION:

Frequency of NS was high with male gender preponderance. Nephrotic syndrome can increase your child's risk of infection and blood clots. It always affects both kidneys and usually appears in the early years of your child's life.

REFERENCES:

1. Ghafari A, Mehdizadeh A, Alavi-Darazam I, Rahimi E, Kargar C, Sepehrvand N. Co-administration of albumin-furosemide in patients with the nephrotic syndrome. Saudi J Kidney Dis Transpl 2011;22:471–5
2. Keddis MT, Karnath BM. The nephrotic syndrome. Hosp Physician 2007;43(10):25–30,38.
3. Nadir SJ, Saleem N, Amin F, Mehmood KT. Steroid sensitive nephrotic syndrome in paediatrics. Pak J Pharm Sci 2011;24:207–10.
4. A. Howman, T. L. Chapman, M. M. Langdon et al., "Immunosuppression for progressive membranous nephropathy: a UK randomised controlled trial," The Lancet, vol. 381, no. 9868, pp. 744–751, 2013
5. Abeyagunawardena AS, Sebire NJ, Risdon RA, et al. Predictors of long-term outcome of children with idiopathic FSGS. Pediatr Nephrol 2007; 22(2):215-221
6. Mekahli D, Liutkus A, Ranchin B et al. Long-term outcome of idiopathic steroid resistant nephrotic syndrome: a multicenter study. Pediatr Nephrol 2009;24:1525-15327.
7. Nauidet P. Treatment of childhood nephrotic syndrome with a combination of cyclosporine and prednisone. French Society of Pediatric Nephrology. Kidney Int 1997;125:981-86.
8. Lombel RM, Hodson E, Gipson D. Treatment of steroid -resistant nephrotic syndrome in children-new guidelines from KDIGO. Pediatr Nephrol 2012; DOI 10.1007/s00467-012-2304-8.
9. J. M. Hofstra, A. J. W. Branten, J. J. J. M. Wirtz, T. C. Noordzij, P. W. G. Du Buf-Vereijken, and J. F. M. Wetzels, "Early versus late start of immunosuppressive therapy in idiopathic membranous nephropathy: a randomized controlled trial," Nephrology Dialysis Transplantation, vol. 25, no. 1, pp. 129–136, 2010
10. Habib R, Gubler MC, Antignac C, Loirat C, Gangnadoux MF. Congenital or childhood nephrotic syndrome with diffuse mesangial sclerosis. Ann Pediatr (Paris) 1990;37:73–77.
11. Gbadegesin R, Hinkes BG, Hoskins BE, Vlangos CN, Heeringa SF, Liu J, Loirat C, Ozaltin F, Hashmi S, Ulmer F, Cleper R, Ettenger R, Antignac C, Wiggins RC, Zenker M, Hildebrandt F. Mutations in PLCE1 are a major cause of isolated diffuse mesangial sclerosis (IDMS) Nephrol Dial Transplant. 2008;23:1291–1297. doi: 10.1093/ndt/gfm759.
12. Debiec H, Nauta J, Coulet F, van der Burg M, Guigonis V, de Heer E, Soubrier F, Janssen F, Ronco P. Role of truncating mutations in MME gene in fetomaternal alloimmunisation and antenatal glomerulopathies. Lancet. 2004;364:1252–1259. doi: 10.1016/S0140-6736(04)17142-0.
13. Holmberg C, Antikainen M, Ronnholm K, Ala HM, Jalanko H. Management of congenital nephrotic syndrome of the Finnish type. Pediatr Nephrol. 1995;9:87–93. doi: 10.1007/BF00858984.
14. Kim JJ, Clothier J, Sebire NJ, Milford DV, Moghal N, Trompeter RS. Nephrotic syndrome in infancy can spontaneously resolve. Pediatr Nephrol. 2011;26:1897–1901. doi: 10.1007/s00467-011-1911-0.
15. Santin S, Bullich G, Tazon-Vega B, Garcia-Maset R, Gimenez I, Silva I, Ruiz P, Ballarin J, Torra R, Ars E. Clinical utility of genetic testing in children and adults with steroid-resistant nephrotic syndrome. Clin J Am Soc Nephrol. 2011;6:1139–1148.