Sarcouncil Journal of Medical Sciences

ISSN(Online): 2945-3526

Volume- 05| Issue- 03| 2026

Research Article

Received: 05-02-2026 | Accepted: 03-03-2026 | Published: 19-03-2026

Platelet Parameters as Predictive Factors for Prognosis of Newly Diagnosed Nephrotic Syndrome among Children in Bint Al-Huda Maternity and Children Teaching Hospital in Thi-Qar, Iraq, 2023

Dr. Ali Naji Al-Shami [1]***, Dr. Ameen Turki Atiyah*** [2] ***and Dr. Mohammed Auda Mutter Al-Shahmany*** [3]

[1]*M.B.Ch.B., C.A.B.P. \ (Pediatrics) Iraqi Ministry of Health, Thi-Qar Health Directorate, Bint Al-Huda Teaching Hospital, Senior Pediatrician, Thi-Qar, Iraq.*

[2]*M.B.Ch.B., C.A.B.P. \ (Pediatrics) Assist. Prof. in the Pediatrics Department, College of Medicine, University of Thi-Qar, Consultant Pediatrician in Bint Al-Huda for Maternity and Children Teaching Hospital, Thi-Qar Health Directorate, Thi-Qar, Iraq.*

[3]*M.B.Ch.B., C.A.B.P. \ (Pediatrics), C.A.B.P. (Pediatric Nephrology) Iraqi Ministry of Health, Thi-Qar Health Directorate, Pediatrician and Pediatric Nephrologist in Bint Al-Huda Children and Maternity Teaching Hospital, Thi-Qar, Iraq.*

Abstract: The clinical presentation of glomerular diseases that are related to excessive proteinuria is the appearance of nephrotic syndrome. Inephrolathic nephrotic syndrome is characterized by similarity between a nephrotic syndrome (proteinuria, hypoalbuminemia, hyperlipidemia, and edema) and non-specific histology that shows abnormalities of the kidney. We wanted to assess the clinical importance of platelet parameters in the prognosis of new idiopathic nephrotic syndrome diagnosis. This was a prospective control study conducted in the Bint Al-Huda Teaching Hospital within a 1 years (between October 2022 and January 2023). It comprised 50 cases that were well-informed about INS and were presented to the pediatrics consultation clinic as part of the Bint Al-Huda Teaching hospital, and 50 patients were presented to the pediatrics consultation clinic who were already having cough and infections in their upper respiratory tract and were eligible to be included as a control group. Each and every patient was observed regarding the presence of ascites or edema. Investigations encompassed a complete blood count (with platelet parameters), urine dipstick- albumin, 24-hour urine- albumin, serum albumin, renal function test (blood urea and serum creatinine), and serum cholesterol and serum triglyceride. The 24-hour urine protein of the steroid-resistant group of patients with nephrotic syndrome is 8293.83 mg/5632.4 higher than the steroid-sensitive group of patients with nephrotic syndrome (2823.92 mg/2379.33; p=0.001). The range of mean platelet count in the steroid-resistant group of nephrotic syndrome was higher compared with the steroid-sensitive group of nephrotic syndrome (758.14±116.68/microliter vs. 493.36±118.28/microliter, p-value=0.001). Major negative correlations between the mean platelet count and the mean platelet volume (r= -0.503, p=0.003) and major positive correlation between the mean platelet count and the mean plateletocrit (r=0.721, p=0.000) and mean platelet count and mean triglyceride levels were proved in the steroid-sensitive nephrotic syndrome group. The number of platelets at diagnosis was high in 75% of the steroid-sensitive group of nephrotic syndrome and 100% of the steroid-resistant group of nephrotic syndrome, and statistically significant (p-value=0.021). Higher levels of platelet counts and PCT and low MPV were relatively sensitive prognosticators of steroid resistance among children with newly diagnosed idiopathic nephrotic syndrome. The prognosis of newly diagnosed idiopathic nephrotic syndrome has no statistically significant predictive value of PDW. It is suggested that further research with a bigger sample would help identify and outline the truth of the platelet parameters and how they are linked to the prognosis of the nephrotic syndrome.

Keywords: Platelet, Nephrotic Syndrome, Children, And Steroids.

INTRODUCTION

In children less than 16 years old, the prevalence of nephrotic syndrome is 1-3 per 100, 000. It is most often presented in the age of 2 years, and three-quarters to half of the cases are presented in children under 6. It is also reported that the male-to-female ratio is 2:1 among children and 1:1 among adolescents and adults (Zamberg, I. *et al.*, 2021). The primary one with an opposite ratio is Lupus. Approximately 90 percent of children had MCNS, 10 percent had FSGS, 1 percent had proliferative lesions, and lastly, 1 percent had membranous nephropathy. This is contrary to adults with NS, as they had 22 percent MCNS, 12 percent FSGS, 20 percent membranous, and 25 percent proliferative lesions. It is highest in MCNS between 2 and 5 years of age. Children aged 3 months to 6 years of age who have NS have MCNS in 87 percent, and 92 percent of them will have their disease remitted by treatment with a course of prednisone (Wei, J. *et al.*, 2022). Nephrotic syndrome has remained relatively constant in the past 3 decades, but it is thought that there is an alteration in the histopathologic patterns of the syndrome (Pournasiri, Z. *et al.*, 2023). Indicatively, reports in various regions across the world have shown that focal segmental glomerulosclerosis (FSGS) is increasingly occurring not only in the avoidance of differences in practices of renal biopsy but also on the liberal postulation that all patients who have not undergone a renal biopsy have had minimal

***Corresponding Author:** Dr. Ali Naji Al-Shami

DOI-https://doi.org/10.5281/zenodo.19118397

alteration nephrotic syndrome (MCNS) (Stone, H. K. *et al.,* 2023).

The clinical manifestation of glomerular diseases is the nephrotic syndrome related to heavy (nephrotic range) proteinuria. It is by definition characterized by proteinuria (nephrotic range) more than 50mg/kg/24 hrs (> 40 mg/m 2/hour or serum albumin less than 3.0 g /dl), hypoalbuminemia, edema, and hypercholesterolemia. The pathogenesis of nephrotic syndrome is interrupted or non-inherited disorders of the podocyte and/or the glomerular basement membrane (GBM). (Maharani, A. R., & Mardiana, N. 2022)

Idiopathic nephrotic syndrome (INS), also known as nephrosis, is the most common cause of nephrotic syndrome in children (Carrasco-Miranda, J. S. *et al.,* 2013). The syndrome of insensible nephritis syndrome (INS) is characterized by simultaneous nephrotic syndrome (proteinuria, hypoalbuminemia, hyperlipidemia, and edema) and non-specific histologic alterations in the kidneys (minimal alterations, focal and segmental glomerular sclerosis (FSGS), and diffuse mesangial proliferation) (Hoodbhoy, Z. *et al.,* 2021). On electron microscopy, glomeruli display a merger between epithelial cell foot processes and no criteria of immunoglobulins or complement on immunofluorescence. It is causes 90 percent of nephrotic syndromes in children under the age of 10, and half of them after the age of 10. (Zhou, J., & Shi, F. 2018)

The high rate of glomerular permeability can result in albuminuria, which later results in hypoalbuminemia. Subsequently, hypoalbuminemia leads to a decrease in plasma colloid osmotic pressure, which leads to an increase in transcapillary filtration of the water in the body (Radakovich, N. *et al.,* 2020). This is further followed by the formation of edema. The movement of the fluids within the vascular compartment to the interstitium is regulated by the capillary hydrostatic pressure and the oncotic pressure. Oncotic pressure is mainly dependent on protein content (Banh, T. H. *et al.,* 2016). To attain edema, the filtered quantity of fluid must be high enough surpassing the upper limit of lymphatic flow, which occurs because of a sufficiently low intravascular oncotic pressure and sufficiently elevated capillary hydrostatic pressure. This leads to hypotension in nephrotic syndrome, where there is a further increase of sodium and water levels through the kidneys. (Lin, J. N. *et al.,* 2016)

Hypoalbuminemia is always accompanied by high cholesterol and/or high triglycerides as well as high serum levels of lipoproteins in the form of chylomicrons, VLDL, intermediate-density lipoprotein (IDL), LDL, and HDL, in NS. This is due to the liver secretion of more proteins to compensate for the hypoproteinemia, which is caused by a huge loss of serum proteins in urine. (Kimiafar, K. *et al.,* 2023)

There is a great risk of thromboembolism (TE) in children. The incidence was 25-5, but another report in the US was 9%. Such numbers are, however, thought to be far higher in practice, because most thromboembolic events are either clinical silent or due to being incidentally found on CT scans (Liu, S. *et al.,* 2020). Venous thromboembolism is more than normal practice in the hospital environment, and it is worth noting that nephrotic syndrome is one of the motivators (Mousavi Baigi, S. F. *et al.,* 2023). The correlation of the nephrotic syndrome and a higher risk of venous thromboembolism is apparent. Venous thromboembolism occurs with maximum rates at the lower albumin ranges, which are 2.0-2.5. Foot process effacement of the glomerular podocytes, resulting in hypoalbuminemia and reduced anticoagulation factor, causes the liver to produce more procoagulable factors, which results in a vicious cycle of venous thromboembolism in the respective patient. (Ahmad, M. N. *et al.,* 2023)

METHOD

The prospective control study was to take place at Bint Al-Huda Teaching Hospital during the period of more than 1 year between the month of October 2022 and January 2023. This involved 50 cases consisting of freshly diagnosed INS visiting the pediatric consultation clinic of Bint Al-Huda Teaching Hospital, and 50 patients who were visiting the pediatric consultation clinic and had a cough, URTI, and were eligible to participate in the control group. Patients and the parents of the patients were included in this study through a formal consent. Inclusion criteria of the 50-case group that was used in this research was a new diagnosis of INS aged between 1 to 14 years old and with a normal K functional status. This study had exclusion criteria of secondary nephrotic syndrome, patients with renal impairment, and systemic diseases. By definition, it includes proteinuria (nephrotic scale) more than 50mg/kg/24h (> 40mg/m 2/hour) and urinary protein to creatinine ratio bigger than 2.0 and hypercholesterolemia. Primary nephritic

Publisher: SARC Publisher

syndrome, in which the disease mechanism and etiology are poorly defined and understood. Three-day urine albumin nil or trace (or proteinurea <4mg/m 2/h r). Failure to come into remission after 4 to 8 weeks of treatment with prednisolone 60 mg/m 2 or 2mg/kg (maximum 60 mg) daily.

History and information were recorded in detail either in the patients and their parents (during the interview, and some were obtained in their records, and the data obtained were: name of the patient, mobile number (to facilitate follow-up), age (date of birth), sex, and age of nephrotic syndrome diagnosis. Physical examination involved growth parameters of weight and height, which were applicable to the official Centers of Disease Control (CDC) growth charts, and the presence of leg edema was also examined. Investigations were done in a complete blood count (including platelet parameters), urine dipstick checking albumin, 24-hour urine checking albumin, serum albumin, renal function test (blood urea and serum creatinine), serum cholesterol, and serum triglyceride. Each of the patients was placed fasted (8 to 12 hours), then 10 milliliters of venous blood were collected as blood samples. Careful aspiration of the venous sample of blood through the needle of the syringe to avoid hemolysis, by the use of a tourniquet effected five centimeters above the cubital fossa. All the grossly hemolyzed samples were ignored.

The sample size of the study consisted of 50 cases of newly diagnosed cases of idiopathic nephrotic syndrome under the treatment of 60 mg/m 3 /day prednisolone and 6-8 weeks under the treatment prior to determining the steroid-resistant and sensitive nephrotic syndrome.

The study was calculated using SPSS version 26 to make statistical calculations. A t-test was conducted to establish the comparative significance of different variables. The P value of less than 0.05 was used as the statistically significant (s) value, a P value less than 0.01 was used as the highly significant (HS), and less than 0.001 was used as incredibly significant (ES).

RESULTS

Fifty children (33 boys & 17 girls, M/F=1.9/1) with newly diagnosed idiopathic nephrotic syndrome and 50 children (26 girls & 24 boys, M/F=1/1.1) as a control group were included to this study. The mean age of patients with newly diagnosed INS was 6.61±3.087 years, and the mean age of the control group was 5.46±2.769 years (p-value 0.053), as shown in Table 3. Mean platelet count in the patient group (588.68±173.369/microliter) was significantly higher than that of the control group (332.9±115.289/ microliter) (p-value=0.002). Mean MPV in the patient group (6.546±0.852fL) was significantly lower than that of the control group (9.126±1.402 fL) (p-value=0.003). Mean PCT in the patient group (0.376±0.0877) was significantly higher than control group (0.295±0.1) (p-value=0.000). Mean PDW in the patient group (20.47+-8.385) was significantly higher than control group (10.628+-1.861) (p-value=0.003), as shown in Table 1.

Table 1: Baseline biochemical characteristics of both groups

	Cases group (50)	Control group (50)	P-value
Age	6.61±3.087 (2-13)	5.46±2.769 (2-11)	0.053
Gender (M/F)	33/17 1.9/1	24/26 1/1.1	
Body weight	24.792±8.544 (12.5-42)	20.17±9.306 (9.5-60)	0.011
HB	12.098±1.625 (6.7-15.2)	12.092±1.121 (10.3-15)	0.983
WBC	10.633±4.629 (4.1-25.5)	11.122±3.27 (4.7-22)	0.543
PLT	588.68±173.369 (259-983.5)	332.9±115.289 (131-765)	0.002
PCT	0.376±0.0877 (0.2-0.63)	0.295±0.1 (0.13-0.62)	0.000
MPV	6.546±0.852 (5.2-9.7)	9.126±1.402 (6.9-14)	0.003
PDW	20.47+-8.385 (2-42)	10.628+-1.861 (8.3-16.7)	0.000

Sixty-two percent of the SSNS group are male, while 37.5% are female, 72.2% of the SRNS group are male, and 27.8% are female. The M/F ratio of the SSNS group was 1.6/1, and for the SRNS group was 2.6/1, as shown in Table 2.

Publisher: SARC Publisher

Table 2: Distribution of cases according to sex.

SEX	SSNS (32)	SRNS (18)	TOTAL	P VALUE (for sex)
MALE	20 (62.5%)	13 (72.2%)	33	
FEMALE	12 (37.5%)	5 (27.8%)	17	0.486
M/F ratio	1.6/1	2.6/1		

Fifty-nine percent of patients within the SSNS group are school and adolescent, while 40.6% are preschool, 61.1% of the SRNS group are preschool, and 38.9% are school age and adolescents, as shown in Table 3.

Table 3: Distribution of cases according to age.

Age \years	SSNS (32)	SRNS (18)	TOTAL	P VALUE
1-6	13 (40.6%)	11 (61.1 %)	24	
7-13	19 (59.4%)	7 (38.9 %)	26	0.164

In the active phase of the disease, the mean 24/hr urine protein of the SRNS group is significantly higher than the SSNS group (8293.83+-5632.4, 2823.92+-2379.33, respectively, p-value=0.001). Mean platelet count in the SRNS group was significantly higher than the SSNS group (758.14±116.68/microliter, 493.36±118.28/microliter, p-value=0.001). Mean PCT in the SRNS group was significantly higher than the SSNS group (0.421±0.0726, 0.352±0.087, p-value=0.006). Mean MPV in the SRNS group was significantly lower than the SSNS group (5.744±0.3666fL, 7±0.7fL, p-value=0.001), as shown in Table 4. Regarding mean blood urea, serum creatinine, serum albumin, total serum cholesterol, serum triglyceride, HB, WBC, and PDW values, no significant difference was seen between these two groups.

Table 4: Biochemical characteristics of the SSNS group and SRNS group in the active phase of the disease.

	SSNS group (mean+-SD) 32 (64%)	SRNS group (mean+-SD) 18 (36%)	P-value
Age	6.97±2.995 (2-13)	5.97±3.229 (2-11)	0.289
Urine protein/24hr	2823.92±2379.33 (723-10886)	8293.83±5632.4 (1035-20000)	0.001
S. Albumin	1.48±0.37 (0.78-2.20)	1.03±0.383 (0.4-1.7)	0.419
S.cholesterol	409.15±101.89 (233-623)	535.9±123.36 (320-718)	0.168
S.TG	297.16±103.4 (156-668)	366±174.76 (113-873)	0.086
Blood urea	25.62±18.59 (10-105)	22.14±9.74 (11.2-48)	0.390
S. Creatinine	0.39±0.173 (0.15-1)	0.345±1.545 (0.18-0.71)	0.870
HB	12.4±1.26 (9.5-15.2)	11.57±2.07 (6.7-14.6)	0.081
WBC	11.1±5.15 (4.1-25.5)	9.84±3.5 (6.4-21.5)	0.361
PLT	493.36±118.28 (259-834.7)	758.14±116.68 (593-983.5)	0.001
PCT	0.352±0.087 (0.2-0.63)	0.421±0.0726 (0.24-0.54)	0.006
MPV	7±0.7 (5.9-9.7)	5.744±0.3666 (5.2-6.7)	0.001
PDW	19.99±9.099 (2-42)	21.33±7.105 (13-37)	0.596

In the remission phase of the disease, Mean S. Albumin of the SRNS group was significantly lower than the SSNS group (3.72±0.525 mg/dl, 2.27±0.55, p-value=0.000). Mean S. Cholesterol in the SRNS group was significantly higher than the SSNS group (210±48.4 mg/dl, 362.1±95.574 mg/dl, p-value=0.000)—Mean S.TG in the SRNS group was significantly higher than the SSNS group (153.028±40.869 mg/dl, 212.428±113.459 mg/dl, p-value=0.045). Mean S. Craetinine in the SRNS group was significantly higher than the SSNS group (0.458±0.137, 0.62±0.22, p-value=0.009). Mean platelet count in the SRNS group was significantly higher than the SSNS group (549.056±82.311/microliter, 284±52.259/microliter, p-value=0.000). Mean MPV in the SRNS group was significantly lower than the SSNS group (6.644±0.597 fL, 8.728±1.164 fL, p-value=0.000). Mean PCT in the SRNS group was significantly higher than the SSNS group (0.356±0.069, 0.244±0.027,p-value=0.000). Regarding blood urea, WBC, HB, and PDW, no significant differences were seen between the two groups, as shown in Table 5.

Publisher: SARC Publisher

Table 5: Biochemical characteristics of the SSNS group and SRNS group in remission phase of the disease.

	SSNS group (mean+-SD) 32 (64%)	SRNS group (mean+-SD) 18 (36%)	P-value
S. Albumin	3.72±0.525 (2.85-5.1)	2.27±0.55 (1.1-3.1)	0.000
S.cholesterol	210±48.4 (124.5-293)	362.1±95.574 (223-603)	0.000
S.TG	153.028±40.869 (100-312)	212.428±113.459 (89.5-562)	0.045
Blood urea	30.184±7.14 (10.7-41)	34.939±9.273 (17.5-49.5)	0.070
S. Creatinine	0.458±0.137 (0.28-0.81)	0.62±0.22 (0.31-0.98)	0.009
HB	11.916±1.52 (9.3-15.5)	11.211±1.485 (8.9-13.9)	0.119
WBC	10.19±2.82 (5.9-17.7)	8.827±1.738 (5.2-11.2)	0.069
PLT	284±52.259 (190-413)	549.056±82.311 (418-718)	0.000
PCT	0.244±0.027 (0.21-0.3)	0.356±0.069 (0.28-0.53)	0.000
MPV	8.728±1.164 (6.8-11.6)	6.644±0.597 (6.1-8.7)	0.000
PDW	24.862±9.247 (11.3-46.2)	25.806±7.794 (15.8-41.2)	0.224

In SSNS group, significant negative correlations between mean platelet count and mean MPV (r=-0.503, p-value=0.003) and also significant positive correlations between mean platelet count and mean PCT(r=0.721, p-value=0.000) and between mean PLT count and mean triglyceride levels were demonstrated (r=0.659, p-value=0.000), but this relation could not be shown with other lipid parameters as shown in table 6.

Table 6: Correlations within the SSNS group (Pearson's correlation coefficient.

	Variable vs variable	R-value	P-value
Negative relation	Mean PLT count- mean MPV	-0.503	0.003
Positive relation	Mean PLT- mean PCT	0.721	0.000
	Mean PLT- mean TG	0.659	0.000

In SRNS groups, significant positive correlations between mean platelet count and mean PCT (r=0.842, p-value=0.000) and between mean PLT count and mean triglyceride levels were demonstrated (r=0.503, p-value=0.033), but this relation could not be shown with other lipid parameters, as shown in Table 7.

Table 7: Correlations within SRNS group (Spearman's rank-order correlation coefficient.

	Variable vs variable	Rho-value	P-value
Positive relation	Mean PLT- mean PCT	0.842	0.000
	Mean PLT- mean TG	0.503	0.033

Table 8: lipid profile and hematologic changes at remission phase.

		SSNS	SRNS	TOTAL	P-value
s.cholesterol	Less than 200 mg/dl	13 (40.6%)	1 (5.5%)	14	0.008
	More than 200 mg/dl	19 (59.4%)	17 (94.5%)	36	
	Total	32	18	50	
S.TG	Less than 150 mg/dl	17 (53.12%)	5 (27.8%)	22	0.083
	More than 150 mg/dl	15 (46.8%)	13 (72.2%)	38	
	Total	32	18	50	
HB	decreased	23 (71.9%)	10 (55.5%)	33	0.242
	increased	9 (28.1%)	8 (45.5%)	17	
	Total	32	18	50	
WBC	decreased	15 (46.9%)	12 (66.6%)	27	0.178
	increased	17 (53.1%)	6 (33.4%)	23	
	Total	32	18	50	

Table 9: Platelet indices at time of diagnosis

		SSNS	SRNS	TOTAL	P VALUE
PLT count	Normal	8 (25.0%)	0 (0.0%)	8	0.021
	High	24 (75.0%)	18 (100.0%)	42	

Publisher: SARC Publisher

	Total	32	18	50	
PCT	Normal	12 (37.5%)	1 (5.5%)	13	0.013
	High	20 (62.5%)	17 (94.5%)	37	
	Total	32	18	50	
MPV	Normal	8 (25%)	0 (0.0%)	8	0.021
	Low	24 (75%)	18 (100.0%)	42	
	Total	32	18	50	
PDW	Normal	7 (21.875%)	0 (0.0%)	7	0.101
	High	25 (78.125%)	18 (100%)	43	
	Total	32	18	50	

DISCUSSION

The mean platelet count, mean PCT, and mean PDW in the current study were significantly different (p-value=0.002, p-value=0.000, and p-value=0.000) whereas, whereas mean MPV was significantly different (p-value=0.003) compared with the study of Fatimah Abdul Hasan Ali in Karbala, where the mean MPV was significantly different (p-value=0.03).

Sixty-two percent of the SSNS perpetrator group identify themselves as males, whilst 37.5 percent are female; 72.2 percent of the SRNS perpetrator group identify themselves as males and 27.8 percent as females. The majority of the patients in the SSNS group are school-aged and adolescents, unlike those in the SRNS group, who are preschool. The average age of the SSNS population was marginally older than the SRNS population; the same was attracted in Mona Khurana et al. in Boston (Lalmuanawma, S. *et al.*, 2020). The average age of the SSNS group was a little smaller than that of the SRNS group. Other articles, such as Michael R. Bennett et al. in Cincinnati, Ohio; Shipra Agrawal et al. in the USA; J. Kim et al. in the U.S.; Jessica R. Gooding et al. in Columbus, Ohio; or Rachel K. Cason et al. in India, indicated that the median age of the SSNS group was much lower than that of the SRNS group (p -value < 0.005). This could be attributed to the various sample sizes that were 50 in this study and 44 in the Boston study, 122 in the Iranian study, 52 in the Cincinnati, Ohio study, 40 in the USA study, 188 in the other U.S. study, 88 in the Columbus, Ohio study, and 192 in the India study. The differences can also be attributed to the different types of studies that included the current study, which used a prospective design as the type of control, its Iranian study, which used a prospective, its Cincinnati, Ohio study which used the cross-sectional study, its Columbus, Ohio study which used the case-control study, and its India study which used the retrospective study. (Wynants, L. *et al.*, 2020; Becker, J. U. *et al.*, 2020; Sullivan, F. 2016)

This is mostly fair in both groups (where the male population was higher) in this study, with the M/F ratio of the SSNS group 1.6/1 and the M/F ratio of the SRNS group 2.6/1. This finding, as demonstrated, is comparable to that of Cincinnati, Ohio, as the M/F of the SSNS group was 1.5 / 1 and that of the SRNS was 1.6 / 1. Additionally, in the India study, the M/F ratio of the SSNS group was 1.8/1, and of the SRNS group was 1.4/1, and in the U.S. study, the females had mainly been affected, with the M/F ratio of the SSNS group being 0.9/1 and of the SRNS group was 0.5/1. The same applies to the Columbus, Ohio study, which had similar results where the M/F ratio of the SSNS group was 0.8/1 and that of the SRNS group was 0.5/1. The differences can be attributed to various social lifestyles and various sample sizes. (Abdelkader, W. *et al.*, 2021)

The average 24-hour urine proteins of the SSNS were significantly lower in comparison with the SRNS group (p-value=0.001)—the same finding, though statistically insignificant, was made in an Iranian study. The mean S. Albumin of the SRNS group was a little less than that of the SSNS group. Mean S. Albumin of reason of the SRNS group was slightly higher than that of the SSNS in an Iranian study. Such differences were not significant.

The average WBC count of the SRNS group was a bit lower in comparison to that of the SSNS one. The average blood urea of the SRNS group was a bit low compared to that of the SSNS group. The outcomes are not of any statistical significance. Our result is supported by the Cincinnati, Ohio study, and a study by Kaan Gull Eroglu et al. in Ankara, which shows that the average number of abortions in the SRNS group was significantly higher than that in the SSNS group (p-

Publisher: SARC Publisher

value=0.001). (Simon, S. *et al.*, 2022; Sinha, U. *et al.*, 2006; Sajda, P. 2006)

The average PCT of the SRNS was much greater in comparison to that of the SSNS (p-value = 0.006); regrettably, the research could not find analogous research. The mean MPV of the SRNS group was lower in comparison with the SSNS group (p = 0.001); in the Cincinnati, Ohio, study, the MPV of the SRNS group was a little less than that of the SSNS group. Table 6 showed that the mean PDW of the SRNS was slightly greater than that of the SSNS (p-value=0.596). The PDP of the PDW of the SRNS group was also compared slightly lower in the Cincinnati, Ohio study than the SSNS group, and this could be due to the other nature of the study, cross-sectional in the Cincinnati, Ohio study and prospective control in our study. The average albumin and MPV of the SRNS group were found to be of a significantly lower values compared to the SSNS group (p-value=0.000, p-value=0.000, respectively), whereas the mean PLT count, mean PCT, mean cholesterol, and mean s had an even lower value. TG of the SRNS group was quite greater than that of the SSNS group (p-value=0.000, p-value=0.000, p-value=0.000, and p-value=0.045, respectively). (Al-Jarrah, O. Y. *et al.*, 2015; Rajkomar, A. *et al.*, 2019; Bahri, S. *et al.*, 2018; Koh, H. C., & Tan, G. 2011)

CONCLUSION

Our findings in the study were that elevated platelet counts, PCT, and low MPV were relatively excellent predictors of steroid resistance in children with newly diagnosed idiopathic nephrotic syndrome. The prognosis of new-onset idiopathic nephrotic syndrome does not have any statistically significant predictor value by PDW. Additional anxiety regarding the significance of the platelet indices and their relevance in the prediction of the prognosis in recently diagnosed identically diagnosed nephrotic syndrome in our center. This should be determined by further investigation of bigger sample size to ascertain the correctness of platelet parameters and their association with the prognosis of the nephrotic syndrome.

REFERENCES

1. Zamberg, I., Schiffer, E., & Stoermann-Chopard, C. "Novice and advanced learners' satisfaction and perceptions of an e-learning renal semiology module during the COVID-19 pandemic: Mixed methods study." *JMIR Medical Education* 7.2 (2021): e29216.
2. Wei, J., Zhang, J., Chen, X., Zou, J., Wei, J., Hu, M., Zhu, S., Qin, Y., & Lei, F. "Exploring the biomolecular mechanism of resveratrol in the treatment of nephrotic syndrome based on network pharmacology." *Pharmacological Research - Modern Chinese Medicine* 3 (2022): 100114.
3. Pournasiri, Z., Hashemi, S. M., Ahmadizadeh, S. N., Yaghmaei, B., Khalili, M., Behzad, A., Soheili, A., & Jamee, M. "Relapse of nephrotic syndrome with unusual thromboembolic event: A case report." *Clinical Case Reports* 11.8 (2023).
4. Stone, H. K., Huang, B., Chen, C., Ma, Q., Bennett, M. R., & Devarajan, P. "External validation of a urinary biomarker risk score for the prediction of steroid responsiveness in adults with nephrotic syndrome." *Kidney International Reports* 8.11 (2023): 2458–2468.
5. Maharani, A. R., & Mardiana, N. "A pregnancy with nephrotic syndrome: A rare case." *International Journal of Surgery Case Reports* 99 (2022): 107707.
6. Warejko, J. K., Tan, W., Daga, A., Schapiro, D., Lawson, J. A., Shril, S., Lovric, S., Ashraf, S., Rao, J., Hermle, T., & Jobst-Schwan, T. "Whole exome sequencing of patients with steroid-resistant nephrotic syndrome." *Clinical Journal of the American Society of Nephrology* 13.1 (2018): 53–62.
7. Carrasco-Miranda, J. S., Garcia-Alvarez, R., Sotelo-Mundo, R. R., Valenzuela, O., Islas-Osuna, M. A., & Sotelo-Cruz, N. "Mutations in NPHS2 (podocin) in Mexican children with nephrotic syndrome who respond to standard steroid treatment." *Genetics and Molecular Research* 12 (2013).
8. Hoodbhoy, Z., Masroor Jeelani, S., Aziz, A., Habib, M. I., Iqbal, B., Akmal, W., Siddiqui, K., Hasan, B., Leeflang, M., & Das, J. K. "Machine learning for child and adolescent health: A systematic review." *Pediatrics* 147.1 (2021).
9. Zhou, J., & Shi, F. "Leptin, hs-CRP, IL-18 and urinary protein before and after treatment of children with nephrotic syndrome." *Experimental and Therapeutic Medicine* 15.5 (2018): 4426–4430.
10. Radakovich, N., Cortese, M., & Nazha, A. "Acute myeloid leukemia and artificial intelligence, algorithms, and new scores." *Best Practice & Research Clinical Haematology* 33.3 (2020): 101192.
11. Banh, T. H., Hussain-Shamsy, N., Patel, V., Vasilevska-Ristovska, J., Borges, K., Sibbald,

Publisher: SARC Publisher

C., Lipszyc, D., Brooke, J., Geary, D., Langlois, V., & Reddon, M. "Ethnic differences in incidence and outcomes of childhood nephrotic syndrome." *Clinical Journal of the American Society of Nephrology* 11.10 (2016): 1760–1768.
12. Lin, J. N., Lin, C. L., Yang, C. H., Lin, M. C., Lai, C. H., Lin, H. H., & Kao, C. H. "Risk of nephrotic syndrome following enteroviral infection in children: A nationwide retrospective cohort study." *PLoS One* 11.8 (2016): e0161004.
13. Kimiafar, K., Sarbaz, M., Tabatabaei, S. M., Ghaddaripouri, K., Mousavi, A. S., Mehneh, M. R., & Baigi, S. F. "Artificial intelligence literacy among healthcare professionals and students: A systematic review." *Frontiers in Health Informatics* 12 (2023): 168.
14. Liu, S., Ko, Q. S., Heng, K. Q., Ngiam, K. Y., & Feng, M. "Healthcare transformation in Singapore with artificial intelligence." *Frontiers in Digital Health* 2 (2020): 592121.
15. Mousavi Baigi, S. F., Sarbaz, M., Ghaddaripouri, K., Ghaddaripouri, M., Mousavi, A. S., & Kimiafar, K. "Attitudes, knowledge, and skills towards artificial intelligence among healthcare students: A systematic review." *Health Science Reports* 6.3 (2023): e1138.
16. Ahmad, M. N., Abdallah, S. A., Abbasi, S. A., & Abdallah, A. M. "Student perspectives on the integration of artificial intelligence into healthcare services." *Digital Health* 9 (2023): 20552076231174095.
17. Lalmuanawma, S., Hussain, J., & Chhakchhuak, L. "Applications of machine learning and artificial intelligence for COVID-19 (SARS-CoV-2) pandemic: A review." *Chaos, Solitons & Fractals* 139 (2020): 110059.
18. Wynants, L., Van Calster, B., Collins, G. S., Riley, R. D., Heinze, G., Schuit, E., Albu, E., Arshi, B., Bellou, V., Bonten, M. M., & Dahly, D. L. "Prediction models for diagnosis and prognosis of COVID-19: Systematic review and critical appraisal." *BMJ* 369 (2020).
19. Becker, J. U., Mayerich, D., Padmanabhan, M., Barratt, J., Ernst, A., Boor, P., Cicalese, P. A., Mohan, C., Nguyen, H. V., & Roysam, B. "Artificial intelligence and machine learning in nephropathology." *Kidney International* 98.1 (2020): 65–75.
20. Sullivan, F. "From $600 M to $6 billion, artificial intelligence systems poised for dramatic market expansion in healthcare." *Frost & Sullivan* (2016).
21. Abdelkader, W., Navarro, T., Parrish, R., Cotoi, C., Germini, F., Iorio, A., Haynes, R. B., & Lokker, C. "ML approaches to retrieve high-quality, clinically relevant evidence from the biomedical literature: Systematic review." *JMIR Medical Informatics* 9.9 (2021): e30401.
22. Simon, S., Mandair, D., Albakri, A., Fohner, A., Simon, N., Lange, L., Biggs, M., Mukamal, K., Psaty, B., & Rosenberg, M. "The impact of time horizon on classification accuracy: Application of machine learning to the prediction of incident coronary heart disease." *JMIR Cardio* 6.2 (2022): e38040.
23. Sinha, U., Singh, A., & Sharma, D. K. "Machine learning in the medical industry." *Handbook of Research on Emerging Trends and Applications of Machine Learning* (2020): 403–424.
24. Sajda, P. "Machine learning for the detection and diagnosis of disease." *Annual Review of Biomedical Engineering* 8 (2006): 537–565.
25. Al-Jarrah, O. Y., Yoo, P. D., Muhaidat, S., Karagiannidis, G. K., & Taha, K. "Efficient machine learning for big data: A review." *Big Data Research* 2.3 (2015): 87–93.
26. Rajkomar, A., Dean, J., & Kohane, I. "Machine learning in medicine." *New England Journal of Medicine* 380.14 (2019): 1347–1358.
27. Bahri, S., Zoghlami, N., Abed, M., & Tavares, J. M. "Big data for healthcare: A survey." *IEEE Access* 7 (2018): 7397–7408.
28. Koh, H. C., & Tan, G. "Data mining applications in healthcare." *Journal of Healthcare Information Management* 19.2 (2011): 65.

Source of support: Nil; **Conflict of interest:** Nil.

Cite this article as:
Al-Shami, A. N., Atiyah, A. T., and Al-Shahmany, M. A. M. "Platelet Parameters as Predictive Factors for Prognosis of Newly Diagnosed Nephrotic Syndrome among Children in Bint Al-Huda Maternity and Children Teaching Hospital in Thi-Qar, Iraq, 2023." *Sarcouncil journal of Medical sciences* 5.3 (2026): pp 28-35.

Publisher: SARC Publisher