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EVALUATION OF LIPID PROFILE IN CHILDREN WITH PRIMARY NEPHROTIC SYNDROME – A PROSPECTIVE STUDY

Pediatrics

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ABSTRACT

Objectives – To evaluate the serum level of Total cholesterol, Triglycerides, LDL, VLDL, HDL and Lipoprotein(a) levels in children aged <15years with primary nephrotic syndrome over 1year period.

Material and Methods - This was a hospital based prospective study. 50 children aged <15 years, admitted in paediatrics department at time of onset or relapse of disease and on regular follow up for 1year are included. After clinical evaluation, lipid profile was done at recruitment, 6months, 1year.

Results - Study revealed elevated levels of total cholesterol, LDL, VLDL, Lipoprotein(a) levels at time of onset and comparitively low levels are seen during the follow up visits. HDL levels remained low to normal and there was no significant difference among first visit levels and follow up levels.

Conclusion - Hyperlipidemia is present in Nephrotic syndrome and their levels became normal during followup.

KEYWORDS

Primary nephrotic syndrome, Hyperlipidemia, LDL, HDL

INRODUCTION :

Nephrotic syndrome is the clinical manifestation of glomerular diseases which is associated with nephrotic – range proteinuria of >3.5 gm/ 24 hr or a urine protein:creatinine ratio >2, hypo - albuminemia (< 2.5gm/dl), edema and hyperlipidemia(cholesterol > 200mg/dl) .1 Nephrotic syndrome incidence is 2-7 and prevalence is 14-16 per 100000 children . 2

Majority (90%) cases are primary (idiopathic). Nephrotic syndrome secondary to systemic diseases like SLE , Henoch – Schonlein purpura , malignancy, infections like hepatitis, HIV also rarely occur.

Methods and Methodology :

The study was conducted in the Paediatric department of Katuri Medical College and Hospital , a tertiary care hospital in Guntur , Andhra Pradesh. The duration of study was 1 year from January 2018 to December 2018. 50 children with primary nephrotic syndrome at onset or relapse having age < 15 years were included in the study. Children with secondary nephrotic syndrome, using corticosteroids or anti-hyperlipidaemic drugs before recruitment into this study were excluded .

This was hospital based prospective study. After taking proper consent children were clinically evaluated and samples were sent for the lipid profile at the time of onset or relapse .

Among the total 50 children , 36 children and 24 children completed their 6 months and 12 months follow up respectively. Repeat samples for lipid profile were sent at 6th and 12th month follow up.

In our study normal serum values of lipid profile are taken as : Serum Cholesterol : 150-250 mg/dl , Serum Triglycerides : 50–160 mg/dl, HDL : 30-70 mg/dl, LDL : < 110 mg/dl, VLDL : 2-40 mg/dl, Lipoprotein (a) : <30 mg/dl.

Chi square test was used to test the significance and data was analysed using SPSS Version 21 software.

Results :

The total number of children included in the study were 50. Among them 36 children were male (72%) and 14 children were female (28%). Male : Female ratio is 2.5 : 1 . The mean age at presentation in this study was 5.5 years .

Table 1. Sex Incidence in present study

Sex	Number of children	Percentage
Male	36	72 %
Female	14	28 %
Total	50	100 %

Lipid profile in this study revealed higher levels of total serum cholesterol (380.70±79.83), serum triglycerides (312.60±58.37), LDL cholesterol (161.60±40.3), VLDL cholesterol (57.46±11.65), Lipoprotein (a) (61.34±21.06) at the time of recruitment .

During the follow up period , lipid profile test at 6th month and 12th month showed gradual improvement in lipid profile. 30-40% of children who showed up at 6th month visit have normal lipid profile values and 99% of children at 12th month visit have normal lipid profile. However there is no significant change in serum HDL cholesterol levels between recruitment and follow up period.

Table 2. Showing mean serum levels of Cholesterol, TAG, LDL, VLDL, HDL, Lipoprotein (a) at recruitment, 6th month and 12th month visit

	VISIT		
	Recruit-ment (n =50)	6th month (n = 36)	12th month (n =24)
Cholesterol (mg/dl)	380.70± 79.83	165.89± 50.27 P =0.0001	202.25± 51.47 P=0.0001
TAG (mg/dl)	312.60± 58.37	172.16± 49.07 P =0.04	203.29± 43.73 P=0.02
LDL (mg/dl)	161.60± 40.3	62.08± 28.1 P =0.028	95.12± 27.7 P=0.031
VLDL (mg/dl)	57.46± 11.65	28.97±9.65 P =0.0001	41.95± 10.5 P=0.0001
HDL (mg/dl)	45.08± 8.01	51.52± 6.75 P =0.93	52.19± 5.26 P = 0.86
Lip (a) (mg/dl)	61.34± 21.06	31.54± 24.07 P =0.002	42.95± 19.45 P=0.002

TAG – Triacylglycerol ; LDL – Low Density Lipoprotein cholesterol ; VLDL – Very Low Density Lipoprotein cholesterol ; HDL – High Density Lipoprotein cholesterol ; Lip(a) – Lipoprotein a

DISCUSSION :

In our study there was male predominance (72%) with M:F ratio =2.5:1 and the average age at presentation was 5.5 years. A study conducted by Orth S et al also showed male predominance (M:F ratio = 2:1) and the higher incidence in age <6 years children.

Study revealed elevated levels of Serum cholesterol, LDL, TAG, VLDL, Lipoprotein (a) levels at the time of recruitment into study when compared to the values during the follow up visits at 6th and 12th month. No significant change in serum HDL cholesterol levels between recruitment and follow up period.

In a study by Mehta et al 3 it was observed that hypercholesterolemia , hypertriglyceridemia , LDL are elevated in 100% cases and VLDL in 80% cases with normal to low levels of HDL cholesterol. In our study , except HDL cholesterol remaining are elevated in 100% of cases similar to above study.

Appel G B et al 4 observed that the mean serum total cholesterol was 302±100 mg/dl and LDL cholesterol was 215±89 mg/dl in most patients and HDL levels are low to normal 46±18 mg/dl in majority cases. Our Present study values are in correlation with the above study.

Conclusion :

Although the initial levels of total cholesterol , TAG, LDL ,VLDL are higher in nephrotic syndrome children , they usually come to normal values by 1year after starting corticosteroid therapy and eating low fat diet.

So routine use of anti-hyperlipidaemic agents like statins is not necessary in children with nephrotic syndrome as the levels come back to normal by one year after starting therapy.

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