

Lipid Profile Abnormalities in Nephrotic Syndrome

¹Dr Mahendra Kumar Balot, Senior Specialist, Pediatrics

²Dr Anish Kumar Jain, Senior Specialist, General Medicine

¹⁻²Shri Sanwaliya Ji Government General Hospital Chittorgarh (Associated with Government Medical College, Chittorgarh)

Corresponding Author: Dr Anish Kumar Jain, Senior Specialist, General Medicine, Shri Sanwaliya Ji Government General Hospital Chittorgarh (Associated with Government Medical College, Chittorgarh)

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Abstract

Background: To study the lipid profile in nephrotic syndrome.

Methods -This is a case-control study in which 50 Normal patients and 50 patients. The Serum lipid profiles of the patients were evaluated.

Results- The study finding found that the serum lipid profile shoed noticeable increase in the nephrotic syndrome in Indian patients.

Conclusion- We concluded that nephrotic patients are having hyperlipidaemia. This hyperlipidaemia may progress in to the cardiovascular diseases. Hence the lipid profile in the nephrotic syndrome must be monitored for better management of the diseases.

Key-words- Lipid profile, Nephrotic syndrome, Hyperlipidemia

Introduction

Nephrotic syndrome is usually accompanied by retention of water and sodium. The degree to which this occurs can vary between slight edema in the eyelids that decreases during the day, to affecting the lower limbs, to generalized swelling, to full blown anasarca.¹

Nephrotic syndrome is characterized by large proteinuria (>3.5 g per 1.73 m² body surface area per day,³ or > 40 mg per square meter body surface area per hour in children), hypoalbuminemia (< 2.5 g/dl), hyperlipidaemia, and edema (which is generalized and also known as anasarca or dropsy) that begins in the face. Lipiduria (lipids in urine) can also occur, but is not essential for the diagnosis of nephrotic syndrome. Hyponatremia also occurs with a low fractional sodium excretion.²

Hyperlipidaemia is caused by two factors: 1 Hypoproteinemia stimulates protein synthesis in the liver, resulting in the overproduction of lipoproteins. 2 Lipid catabolism is decreased due to lower levels of lipoprotein lipase, the main enzyme involved in lipoprotein breakdown.³ Cofactors, such as apolipoprotein C2 may also be lost by increased filtration of proteins.

Material and Methods

Type of study-Case control study

Sampling methods- Simple random sampling

Study included 50 cases of children with nephrotic syndrome for this prospective study. 50 children without liver and kidney disorders were taken as control group. 50 nephrotic syndrome cases were clinically examined and following investigations were performed in each case, before steroid therapy (ISKDC Regimen), after one month of steroid therapy and at the end of therapy.

Inclusion Criteria

- All infants and children between 0-12 years of age suffering from nephrotic syndrome.

Exclusion Criteria

- Children with liver disorders.
- Children with oedema due to Kwashiorkor
- Children with oedema due to CCF
- Children suffering from kidney diseases other than nephrotic syndrome.

Pre-structured proforma was used to record the information from the individual. After getting the consent from the parents clinical data were collected and entered in the proforma, which include age, sex, presenting complaints, drug history and type of nephrotic syndrome.

After history taking and clinical examination, blood samples were collected from the patients for lipid profile and thyroid function. The enzymatic method used for measurement of serum cholesterol and VLDL, the enzymatic calorimetric method used for measurement of LDL and triglycerides, phosphotungstate method for HDL and photometric method used for measuring serum albumin.

Data analysis

For categorical variable chi-square test was used. P value of <0.05 consider as significant.

Results

The 50 Normal patients & 50 Nephrotic syndrome patients were studied.

Table 1: Observed Serum Levels of lipo proteins

Lipid profile	Control	Cases	p-value
Total Cholesterol (mg/dl)	172.36±26.32	302.26±95.69	<0.05
High Density Lipids (mg/dl)	43.36±5.32	102.36±8.12	<0.05
Low Density Lipids (mg/dl)	124.32±19.65	182.69±38.26	<0.05
Triglycerides (mg/dl)	92.56±13.28	168.25±18.26	<0.05

Discussion

The above data showed significant increase level of the lipo proteins. The level of the cholesterol, HDL, LDL & triglycerides is founds to be markedly increases. This concludes that hypercholesterolemia in the nephrotic patients. The hypercholesterolemia is observed is also previously reported in nephrotic syndrome study Krishnaswany D et al, Appel G.B. et al and Alexander J.H et al showed the same findings.³⁻⁵

The level of the HDL decrease is also reported in previous studies. Adekoya A.O showed the same results of the decrease in levels of the HDL⁶

The increased LDL can be explained by severe reduction of hepatic LDL receptor protein abundance in nephrotics despite normal LDL receptor mRNA abundance and gene translation rate.⁷

Conclusion

The study finding concludes that the serum lipid profile showed noticeable increase in the nephrotic syndrome. It also observed that nephrotic patients are having hyperlipidemia. This hyperlipidemia may progress into the cardiovascular diseases. Hence the lipid profile in the nephrotic syndrome must be monitored for better management of the diseases.

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