



THE SERUM LIPIDS  
IV. NEPHROTIC SYNDROME

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Nephrotic syndrome has striking manifestations in its hyperlipidemia and hyperlipemia reflecting the increased levels of certain classes of serum lipoproteins. It can provide varieties of lipoproteins, ranging from a discrete increase in beta-lipoproteins to tremendous increases in pre-beta lipoproteins (1, 2, 3) to represent secondary hyperlipoproteinemias, types II, IV and V. The mechanism by which certain lipoprotein concentrations are increased in nephrosis, so far, has not been established. We have observed these serum changes in both ambulatory and hospitalized nephrotic patients which are worthy of academic interest.

MATERIAL AND METHODS:

A total number of 27 nephrotic subjects were studied. When diagnosed, all of them showed classical, clinical features of nephrotic syndrome with hypoalbuminemia and hyperlipemia. Renal biopsy confirmed the diagnosis in most of cases. They were categorized into 3 groups:

1. UNTREATED: There were 8 new patients without history of any treatment in this group (age 15-51 years, 5 male, 3 female).

2. PREDNISOLONE-TREATED BUT UNCONTROLLED: There were 10 patients falling in this group (age 17-47, 9 males, 1 female).

3. PREDNISOLONE - CONTROLLED: (doses vary from 10 mg. every other day to 10 mg. per day). There were 9 patients in this group (age 15-41 years, 7 males, 2 females). At the time of investigation, no one had edema or hypoproteinemia and the proteinuria was trace or negative. There was only one in this group

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who had spontaneous remission after the complete withdrawal of the steroids. The serum lipids and lipoproteins were analyzed by the methods previously mentioned. (4)

#### RESULT:

I. Untreated: The range for alpha-lipoprotein was 15-29% (mean = 22%), pre-beta-lipoprotein was 15-33% (mean = 43%), beta-lipoprotein 36-50% (mean 43%) and albumin-bound-free fatty acid was 7-17% (mean 10%). Cholesterol was 148-812 mg% (mean = 369 mg%), triglyceride was 124-432 mg% (mean = 281 mg%) and total lipid was 429-2589 (mean 1201 mg%).

II. Prednisolone-treated but uncontrolled: Alpha-lipoprotein 24-27% (mean = 22%), pre-beta-lipoprotein was 12-42% (mean = 24%), beta-lipoprotein was 23-44% (mean = 34%) and albumin-bound-free fatty acid was 5-29% (mean = 19%). Cholesterol was 160-1064 mg% (mean = 298 mg%), triglyceride was 107-338 mg% (242 mg%) and total lipid was 692-4082 mg% (mean = 1267 mg%).

III. Prednisolone-controlled: Alpha-lipoprotein was 13-24% (mean = 20%), pre-beta-lipoprotein was 21-

40% (mean 29%), beta-lipoprotein was 22-34% (mean = 28%) and albumin-bound-free fatty acid was 8-34% (mean = 23%). Cholesterol was 119-300 mg% (mean = 190 mg%), triglyceride was 63-326 mg% (mean = 149 mg%) and total lipid was 462-1208 mg% (mean = 918 mg%).

All data of groups I, II and III were shown in tables I, II, III-IV and V-VI respectively.

#### COMMENTS

Nephrotic syndrome represents secondary hyperlipoproteinemias, types II, IV and V. The data of the three groups as presented are classically characterized by a rise in triglyceride, cholesterol, pre-beta-lipoprotein and beta-lipoprotein in the untreated nephrotic syndrome; all of these values are slightly increased in partially treated and uncontrolled nephrosis and they are classically within our "Reference values" in the prednisolone-controlled group.

Beside the decrease of proteinuria, the increase of serum albumin; the return to normalcy of these serum lipoproteins should indicate the therapeutic response.



TABLE I.

## UNTREATED NEPHROTIC SYNDROME

Age-yr.	Lipoprotein Expressed in per cent						Albumin-bound-free	
	No.	alpha		pre-beta		beta		fatty acids %
		Range	Mean	Range	Mean	Range	Mean	
15-51 M:F=5:3	8	15-29	22	15-33	24	36-50	43	7-17 10

## PREDNISOLONE-TREATED BUT UNCONTROLLED N.S.

17-47 M:F=9:1	10	24-27	22	12-42	24	23-44	34	5-26 19
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## PREDNISOLONE-CONTROLLED N.S.

15-41 M:F=7:2	9	13-24	20	21-40	29	22-34	28	8-34 23
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TABLE II.

## UNCONTROLLED N.S.

Age-yr.	No.	Cholesterol mg%		Triglyceride mg%		Total lipids mg%	
		Range	Mean	Range	Mean	Range	Mean
15-51 M:F=5:3	8	148-812	369	124-432	281	429-2586	1201

## PREDNISOLONE-TREATED BUT UNCONTROLLED N.S.

17-47 M:F=9:1	10	160-1064	298	107-338	242	692-4082	1267
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## PREDNISOLONE-CONTROLLED N.S.

15-41 M:F=7:2	9	119-300	190	63-326	149	462-1208	918
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## ย่อความภาษาไทย

ในผู้ป่วยด้วย Nephrotic syndrome พบว่ามี secondary hyperlipoproteinemias ชนิด II, IV และ V จากการวิจัยในผู้ป่วยของโรงพยาบาลนครเชียงใหม่ จำนวน 3 กลุ่ม พบว่าปริมาณของ Triglyceride, cholesterol, pre-beta lipoprotein และ beta-lipoprotein เพิ่มขึ้นในผู้ป่วย Nephrotic syn-

drome ที่ไม่ได้รับการรักษา และเพิ่มขึ้นเล็กน้อยในผู้ป่วย Nephrosis ที่ได้ Prednisolone แต่ยังคงควบคุมไม่ได้ ส่วนในกลุ่มที่สามารถควบคุมด้วย Prednisolone นั้น พบว่า cholesterol และ Serum lipoproteins ดังกล่าวกลับสู่ระดับปกติ.