

# Pattern of Dyslipoproteinemia in Selected Population of Karachi

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## Abstract

Pattern of dyslipoproteinemia was studied ,over a period of 3-1/2 years in 487(394 males, 93 females) cases aged 4 to above 70 years. Type IV hyperlipoproteinemia was most prevalent (36%) followed by type V (15%) (JPMA 44:165,1994).

## Introduction

Lipid abnormalities are frequent both in healthy school going children and adults in Pakistan<sup>1,2</sup>. Studies in neonates and their mothers indicate that diet may be an important aetiological factor for hypercholesterolaemia in children<sup>3</sup>. A substantial number of Pakistanis get their first heart attack in the fourth decade of life<sup>3</sup> and hypertriglyceridaemia and low LDL has been reported in hypertensive subjects<sup>4</sup>. Lipoprotein phenotyping is useful in classifying lipid abnormalities and helps in assessing the probable cause of the lipid disorders<sup>5</sup>. The present study was undertaken to see the pattern of dyslipoproteinemia in a selected group of hyperlipidemic patients.

## Patients and Methods

All the patients referred to clinical laboratory at The Aga Khan University Medical Centre, for lipoprotein electrophoresis between October, 1989 to March, 1993 were included. Patients were fasting for 12 hours. Five ml. blood was collected in plain tube and serum stored at 4°C. The paragon lipoprotein electrophoresis (LEP) kit P/N 855910 (Beck men Instruments Inc/Diagnostic System Group) was used for electrophoretic separation of lipoproteins in human serum. Phenotypes were described according to Fredrickson's classification<sup>6</sup>.

## Results

Patients were divided into different age groups from 0 to greater than 70 years. Phenotypes were identified and mentioned against each age group. Total number along with specific type of hyperlipidemia in individual age groups were studied and their percentages were calculated (Tables I,II and III).

**Table I. Pattern of dyslipoproteinemia among the total patients**

Age group (years)	Type I	Type II	Type III	Type IV	Type V	Normal phenotype	Total	%
0-14	0			2	1	6	9	1.81
15-29	8			9	7	6	30	6.04
30-49	45	3	4	114	45	82	293	60.0
50->70	21	2	2	50	21	60	87	31.8
Total of various types	74	5	6	175	74	154		
% of prevalence of various types	15.1	1.0	1.2	35.9	15.1	31.6	487	
<b>Total</b>	<b>487</b>							

**Table II. Pattern of dyslipoproteinemia among the males**

Age group	Type I	Type II	Type III	Type IV	Type V	Normal phenotype	Total	%
0-14				2		5	7	1.5
15-29				9	5	4	23	5.8
30-49	39	2	4	99	39	63	246	62.2
50->70	13	2	1	38	19	4	118	29.6
Total of diff. types	57	4	5	148	63	117	394	
Percentage	14.4	1.0	1.2	37.5	15.9	29.6		
<b>Total</b>	<b>394</b>							

**Table III. Pattern of dyslipoproteinemia among the females.**

Age group	Type I	Type II	Type III	Type IV	Type V	Normal phenotype	Total	%
0-14						1	1	1.0
15-29	3				2	2	7	7.4
30-49	6	1		15	6	19	50	50.4
50->70	8		1	12	2	15	40	42.8
Total of various types	17	1	1	27	10	37	93	
% of various types	18.2	1.0	1.0	29.0	10.7	39.7		

Maximum number of patients (101) were in the age. group of 40 to 44 years which constitute 20.7% of total population studied. Type IV hyperlipidemia, defined as broad pre-beta band with moderate to markedly increased VLDL in LEP was most prevalent (35.9%) in all age groups. This included 2 of the 6 patients between the ages of 0 to 4 years. Type I hyperlipidemia, defined by the presence of an intense band at application with moderate to markedly increased chylomicrones in the LEP, is most prevalent (48.6%) in age group of 35 to 44 years. Pure hypercholesteremia type IIa, defined as beta lipoproteins in the LEP and grossly elevated with normal triglycerides and chylomicrones, mixed variety type IIb, defined as increased beta and pre-beta lipoproteins in the LEP and type III (defined as intermediate density lipoprotein fraction appearing between beta and pre-beta band cholesterol and triglycerides slightly or grossly elevated in the LEP) were found in very few patients constituting 1 to 1.2% of the total population respectively.

### Discussion

The present study done on a very selected group, does not represent the entire population of Karachi. However, it provides an opportunity to see the prevalence of different patterns of dyslipoproteinemia in this population. Lipoprotein phenotyping is useful in classifying lipid abnormalities and in assessing probable cause of underlying disorders. However, a given type may be due to the presence of various genetic abnormalities<sup>3</sup>. The result of this study indicate high prevalence of hyper triglyceridemia in contrast to the previous study which showed high incidence of hypercholesterolemia<sup>7</sup>. However, previous studies were done on a sample of healthy population selected at random whereas in this study all the patients were referral cases suspected to have hyperlipidemia. Further workup is, hence, strongly emphasized. High incidence of moderate to severe hypertriglyceridemia (type IV, V and I) is alarming because of its association with atherosclerosis, constituting 6% of all the incidence with myocardial infarction<sup>8</sup>. Evidence support the view that hyper triglyceridemia is more commonly associated with obesity, uncontrolled diabetes meilitus, access of alcohol ingestion, renal failure, SLE, lipodystrophy, glycogen storage disease and use of various medications like beta-blockers and oral contraceptives<sup>4</sup>. The result of this study demands a more comprehensive prospective study to evaluate the involvement of secondary factors in development of dyslipoproteinemia and molecular defects (determined by using latest predieator, plasma apolipoproteins, forming the genetic basis of lipid disorders in our population.

## References

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