To the Editors:

Prevalence of high serum lipoprotein (a) in a selected sample of Sri Lankan adults

Lipoprotein (a) – Lp(a) is an LDL-like lipoprotein which is a newly identified risk factor for coronary artery disease (1). It is believed to play a role in both atherogenesis and thrombosis (2). Studies on Lp(a) concentration among people in the south east Asian region are limited (3), and there are no published reports on Lp(a) concentrations of Sri Lankan subjects.

We did cross-sectional study to determine the distribution of Lp(a) in 90 healthy volunteers (59 males and, mean age: 44.1 ± 10.7 years) and its association with other risk factors. The subjects studied belonged to upper or middle income groups (eg. University employees). The Ethics Committee of the Faculty of Medicine, Colombo approved the study. Weight and height, waist and hip circumference were measured. Venous blood samples were collected after a 12 to 14 hour fast and the serum Lp(a), total and HDL cholesterol and triglyceride concentrations were determined, and serum LDL cholesterol concentration was calculated. Serum Lp(a) was analysed by a sandwich ELISA technique (Perimmune Inc., USA). Serum total cholesterol, HDL cholesterol and triglycerides were determined using commercial reagent kits (Randox Laboratories, UK). Blood pressure was measured under standard conditions.

Lipoprotein (a) showed a skewed distribution (Table 1). The median and 90th percentile values for Lp(a) were higher in our study than that reported from North Vietnam (3). It has been suggested that the atherogenic properties of Lp(a) are expressed when the serum concentration exceeds 30 mg/dl (4). Twenty percent of subjects studied

(men $n=9$, women $n=9$) had Lp(a) concentrations >30 mg/dl. There was no significant effect of age, sex, family history of hypertension, ischaemic heart disease or diabetes, on serum Lp(a) concentration. The serum Lp(a) concentrations at varying levels of BMI, or ratio of waist-to-hip circumference and blood pressure are given in Table 2. Unlike other lipoproteins, elevated Lp(a) concentrations were not associated with adiposity as indicated by high BMI or waist-to-hip circumference ratio. There was no significant difference in the mean values for serum total cholesterol, LDL cholesterol and HDL cholesterol among groups categorised according to their Lp(a) concentration (Table 3). Multiple regression analysis showed that serum Lp(a) levels were positively associated with diastolic blood pressure ($t=2.18$, $p=0.033$) and negatively associated with serum triglycerides ($t=2.97$, $p=0.004$). No significant association was noted with total, LDL or HDL cholesterol, BMI, family history or smoking.

Table 1. Distribution of serum lipoprotein (a)

Lipoprotein (a) mg/dl	N	%
1.0 – 20.0	61	67.8
20.1 – 30.0	11	12.2
30.1 – 40.0	11	12.2
40.1 – 50.0	3	3.3
50.1 – 60.0	4	4.4

Geometric mean ± 1 SD (mg/dl) 10.9 (8.27, 13.5)

Median, 90th percentile (mg/dl) 11.5, 33.45

Table 2. Lipoprotein (a) concentrations at varying levels of body mass index, waist-to-hip circumference ratio, and systolic and diastolic blood pressure

		N	Lipoprotein (a) mg/dl	
			Geometric mean	± 1 SD
Body mass index	$< 25.0 \text{ kg/m}^2$	60	12.0	9.4, 14.6
	$\geq 25.0 \text{ kg/m}^2$	28	8.6	7.0, 12.7
Waist: hip circumference ratio				
Males:	< 0.90	45	10.6	8.1, 13.1
	≥ 0.90	14	8.8	5.8, 11.8
Females:	> 0.85	22	10.9	6.4, 15.3
	≥ 0.85	2	17.8	14.8, 20.9
Systolic blood pressure	$< 130 \text{ mm Hg}$	72	10.2	7.7, 12.7
	$\geq 130 \text{ mm Hg}$	18	14.1	10.9, 17.3
Diastolic blood pressure	$< 90 \text{ mm Hg}$	72	10.0	7.5, 12.4
	$\geq 90 \text{ mm Hg}$	18	15.4	12.1, 18.6

Table 3. Serum cholesterol and triglyceride concentrations at varying levels of serum lipoprotein (a)

	Lipoprotein (a) mg/dl							
	1-20 mg/dl		21-30 mg/dl		31-40 mg/dl		41-60 mg/dl	
	N	Mean $\pm$ SD	N	Mean $\pm$ SD	N	Mean $\pm$ SD	N	Mean $\pm$ SD
Total cholesterol (mmol/l) ¹	61	5.5 $\pm$ 0.96	11	5.7 $\pm$ 1.43	11	5.5 $\pm$ 0.95	7	5.3 $\pm$ 0.58
LDL cholesterol (mmol/l) ¹	61	3.7 $\pm$ 0.89	11	4.1 $\pm$ 1.45	11	3.8 $\pm$ 0.94	7	3.7 $\pm$ 0.64
HDL cholesterol (mmol/l) ^{1,2}	57	1.0 $\pm$ 0.28	9	1.1 $\pm$ 0.22	10	1.1 $\pm$ 0.26	7	1.1 $\pm$ 0.27
³ Triglycerides (mmol/l)	61	1.5 $\pm$ 0.19	11	1.4 $\pm$ 0.06	11	1.3 $\pm$ 0.17	7	1.2 $\pm$ 0.14

¹ Multiply by 38.6 to convert to mg/dl

² Data not available for 7 subjects

^{2,3} Multiply by 88.5 to convert to mg/dl

There have been several reports that south Asians are at a greater risk of developing coronary artery disease despite relatively low lipid levels and BMI compared with their Caucasian counterparts (5). Raised serum Lp(a) may be a potential risk factor which contributes to increased risk of coronary artery disease in south Asians. Serum Lp(a) concentrations have been reported to be significantly associated with coronary heart disease independent of other risk factors (1). A fifth of our study population had elevated Lp(a) levels.

References

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