Thesis Title Lipid Status in the Thai Elderly

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ABSTRACT

The purpose of this study was to assess lipid status in 150 affluent-urban elderly subjects consisting of 50 men and 100 women with the age ranging from 60.0 to 86.0 yrs. Fourty-eight subjects had been on medical treatment, i.e. 11(7.3%) were non-insulin-dependent diabetes mellitus (NIDDM), 27(18%) were hypertension, 4(2.7%) were NIDDM and hypertension, and 6(4.0%) were dyslipidemia. The data of these 48 elderly subjects were not included for the analysis of mean±SEM of each parameter. However, they were included for linear regression or multiple regression analysis. The remaining 102 elderly subjects were categorized into 3 groups according to the diagnosis at the time of the study, ie, 29 healthy elderly subjects consisting of 8 men and 21 women, 59 elderly subjects with impaired glucose tolerance

(IGT) consisting of 17 men and 42 women, and 14 elderly subjects with NIDDM consisting of 7 men and 7 women. They were categorized into 2 age groups: 60.0-69.9 and 70.0-86.0 yrs.

Out of 8 healthy elderly men, 5(62.5%) had plasma total cholesterol (TC) $\geq$5.17 and plasma LDL-C $\geq$3.36 mmol/L and 1(12.5%) had plasma HDL-C <0.9 mmol/L whereas in 21 healthy elderly women, 2(9.5%) had plasma TC $\geq$5.17 mmol/L only, 10(47.6%) had plasma TC $\geq$5.17 and LDL-C $\geq$3.36 mmol/L, and 1(4.8%) had plasma triglyceride (TG) $\geq$2.26 mmol/L. In 17 elderly men with IGT, 7(41.2%) had plasma TC $\geq$5.17 and LDL-C $\geq$3.36 mmol/L, 2(11.8%) had plasma TG $\geq$2.26 mmol/L, 1(5.9%) had plasma TC $\geq$5.17 and TG $\geq$2.26 mmol/L whereas in 42 elderly women with IGT, 8(19.0%) had plasma TC $\geq$5.17 mmol/L, 26(61.9%) had plasma TC $\geq$5.17 and LDL-C $\geq$3.36 mmol/L, 4(9.5%) had plasma TC$\geq$5.17 and TG $\geq$2.26 mmol/L. In 7 elderly men with NIDDM, 1(14.3%) had plasma TC $\geq$5.17 and LDL-C $\geq$3.36 mmol/L, 1(14.3%) had plasma TG $\geq$2.26 mmol/L, 1(14.3%) had plasma TC $\geq$5.17 and TG $\geq$2.26 mmol/L, and 1(14.3%) had plasma HDL-C <0.90 mmol/L. In 7 elderly women with NIDDM, 1(14.3%) had plasma TC $\geq$5.17 mmol/L, 4(57.1%) had plasma TC $\geq$5.17 and LDL-C $\geq$3.36 mmol/L, 1(14.3%) had plasma TC $\geq$5.17 and TG $\geq$2.26 mmol/L. These findings indicate that dyslipidemia is an important problem affecting health of elderly men and women.

Factors affecting plasma lipid and lipoprotein levels in these 150 elderly subjects included age, gender, obesity, Hb level, blood glucose level, and fatty acid (FA) status. Age had significantly negative relationships with plasma TC, LDL-C and S-particle levels. Elderly women had higher plasma HDL-C and serum apo A-I levels than elderly men.

Between body mass index (BMI) and waist-over-hip circumferences (WHR), indices for overall obesity and abdominal obesity, respectively, only BMI had significantly negative relationship with plasma HDL-C levels in 150 elderly subjects whereas only WHR had significantly positive relationships with plasma TG, plasma L-particle, and M-particle levels. Between body fat mass (BFM) and fat-free mass (FFM), only FFM had significantly positive relationships with plasma HDL-C and serum apo A-I levels whereas BFM had significantly positive relationships with plasma TG, serum apo B, plasma L-particle, and M-particle levels. These findings indicate that in these 150 elderly subjects the increase in their BFM raised their plasma TG levels derived from both chylomicron and VLDL, and serum apo B levels, and abdominal fat played the important role in this matter whereas the increase in their FFM increased their plasma HDL-C and apo A-I levels.

Linear regression analysis revealed that only in 50 elderly men there were significantly positive relationships between Hb and serum apo B levels as well as between Hb and serum retinol-binding protein (RBP) levels. These findings indicated that oxygenation is required for the synthesis of apo B and RBP.

Out of 32 elderly men without preexisting underlying diseases, 17(53.1%) were IGT and 7(21.9%) were NIDDM; and out of 70 elderly women without preexisting underlying diseases, 42(60%) were IGT, and 7(10%) were NIDDM. Among the 3 groups of elderly women, only mean plasma TC and LDL-C levels in elderly women with IGT were significantly higher than healthy elderly women. Among the 3 groups of elderly men, only mean serum apo A-I level in elderly men with IGT was significantly higher than that in healthy elderly.

Multiple regression of plasma lipoprotein levels on 14 fatty acid levels in serum or erythrocyte reveals that linoleic acid did not play significant role on lipoprotein metabolism in 150 elderly subjects; it only lowered serum apo A-I level which was counteracted by 18:0 and 20:4 n-6, 18:1 n-9 and 20:0 increased plasma TG level whereas these 2 FAs lowered plasma HDL-C level which was counteracted by 20:4 n-6; and 14:0 lowered plasma LDL-C level.