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The Reply

We appreciate the interest of Peng et al in our article.[1] In regard to the difference in correlation between the visceral adiposity index and plasma concentration ratio of triglyceride (TG)/high-density lipoprotein cholesterol (HDL-C) in our sample and theirs, we note that the visceral adiposity index is the product of 3 factors: (1) model of adipose distribution, calculated by dividing measured waist circumference by waist circumference predicted from body mass index; (2) TG (millimoles/liter) divided by 1.03 (men) or 0.81 (women); and (3) inverse of HDL-C (millimoles/liter) multiplied by 1.31 (men) or 1.52 (women).[2] Because the formula for the visceral adiposity index includes constants and essentially TG/HDL-C ratio, the relation between the visceral adiposity index and the TG/HDL-C depends almost exclusively on the variability of model of adipose distribution values. Because the model of adipose distribution values in our sample were 1.09 ± 0.09 for women and 1.08 ± 0.09 for men, a high correlation between TG/HDL-C ratio and visceral adiposity index is predictable. We cannot explain the lower correlation reported by Peng et al, but it could occur if there was a much wider distribution of the model of adipose distribution values in the National Health and Nutrition Examination Survey III database they used. However, we would expect the mean model of adipose distribution values in National Health and Nutrition Examination Survey III to be approximately 1.0 because waist circumference and body mass index are highly correlated ($r = 0.86$-0.93) in various race/ethnic groups in that sample.[3]

A second issue is the concordance between the visceral adiposity index and the TG/HDL-C ratio in identifying high-risk individuals. We found a high concordance ($\kappa = 0.88$) between the 2, whereas Peng et al estimated a low agreement ($\kappa = 0.33$). Because concordance analysis uses dichotomous variables, the approach is highly dependent on the cut-points selected. Remarkably, our visceral adiposity index cut-point (2.4) is close to that previously proposed by Amato et al.[4]

Finally, comparisons of the merits of visceral adiposity index versus TG/HDL-C in predicting cardiovascular disease must consider differences in study design and statistical methodology. Amato et al[1,4] used data from a retrospective, observational study. In contrast, our study was prospective, and we estimated hazard ratios for cardiovascular disease events by Cox's proportional hazards regression, an approach that takes into consideration time and is the standard method to estimate relative risk in cohort studies.

We believe our conclusion that "the TG/HDL-C ratio identified not only more 'high' risk individuals, but also those with higher relative risk than the VAI"[1] is robust and consistent with the data. Methodological issues pertaining to the distribution of model of adipose distribution values and definition of high-risk visceral adiposity index cut-points should be resolved before considering racial/ethnic or geographic differences in the association of visceral adiposity index with TG/HDL-C ratio and cardiovascular disease risk.

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