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Atherosclerotic Markers in Obese and Nonobese Children and Relationship with Nighttime Hypertension

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Dear Editor,

We have read the article by Tekin et al. [1] entitled ‘Ambulatory blood pressure parameters in office normotensive obese and non-obese children: relationship with insulin resistance and atherosclerotic markers’ with great interest. The authors suggested that the ratio of high low-density lipoprotein cholesterol (LDL-C) to high-density lipoprotein cholesterol (HDL-C) and the ratio of total cholesterol (TC) to HDL-C in children and adolescents might be risk factors for nighttime hypertension. However, we think there are some points that should be mentioned as contributory factors.

Several large prospective studies, including AMORIS, INTERHEART, the Quebec Cardiovascular Study, and MONICA/KORA, have clearly shown that the apolipoprotein (apo) B:apo A-I ratio, which represents the balance of atherogenic and antiatherogenic lipoproteins, is a superior marker of coronary heart disease risk compared to all conventional markers, including the TC:HDL-C and LDL-C:HDL-C ratios [2, 3]. Prospective epidemiological studies have shown that increased vascular risk was associated with increased basal levels of cytokines, such as interleukin-6 and tumor necrosis factor- α , cell adhesion molecules, such as soluble intercel-

lular adhesion molecule 1, P-selectin and E-selectin, and decreased acute-phase reactants, such as high-sensitivity C-reactive protein, fibrinogen and serum amyloid A [4]. In this regard, apo B and apo A-I measurement could have been used to obtain more reliable data, or at least several additional risk markers as stated above, and also the TC:HDL-C and LDL-C:HDL-C ratios.

Although the authors have suggested that high LDL-C:HDL-C and TC:HDL-C ratios in children and adolescents might be risk factors for nighttime hypertension, we think the main relationship is between hypertension and obesity itself [5, 6]. We further believe this study suggested that elevated nighttime systolic blood pressure was associated with an increased risk of being obese.

Lastly, in order to prevent misunderstandings, the authors should define clearly whether there was a relationship between insulin resistance, determined by homeostasis model assessment, and nighttime hypertension. In this way, an explanation of these concerns would certainly provide the readers with clearer information.

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Reply

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Dear Editor,

Thank you for your interest in our study [1]. We have already followed up approximately 2,500 obese children and adolescents in our outpatient clinic and evaluated the lipid profiles in all of them. The low-density lipoprotein cholesterol (LDL-C) to high-density lipoprotein cholesterol (HDL-C) ratio and total cholesterol (TC) to HDL-C ratios are simple tests in clinical practice used to evaluate atherosclerosis in children and adolescents, as well as in adults. In the AMORIS study, the authors reported that the apolipoprotein (apo) B:apo A-I ratio was important for the prediction of future cardiac death in adults [2]. Similarly, Juonala et al. [3] reported that the apo B:apo A-I ratio measured in adolescence was superior to the LDL-C:HDL-C ratio for the prediction of subclinical atherosclerosis determined by carotid intima media thickness in adults. We would like to emphasize once more that our study was performed in children and adolescents, not adults. The evaluation of apo B and apo A-I is not possible in routine clinical practice in all obese patients, but the lipid profile can easily be assessed routinely in all obese patients. Therefore, the evaluation of the LDL-C:HDL-C and TC:HDL-C ratios is simple and easy for the prediction of atherosclerosis. Furthermore, we used these ratios for the prediction of masked hypertension diagnosed by ambulatory blood pressure monitoring (ABPM).

The majority of our obese patients did not have office hypertension. However, office blood pressure (BP) measurements may be misleading for the diagnosis of hypertension in obese children and even in healthy children. Masked hypertension is a clinical condition in which office BP is normal but there are hypertensive values in ABPM. Therefore, ABPM should be performed to diagnose those patients with masked hypertension. Additionally, ABPM is also helpful in the evaluation of nondipping BP and isolated nighttime hypertension [4]. Nighttime hypertension is defined as ambulatory systolic or diastolic BP levels \geq 95th percentile of height- and sex-adjusted nighttime reference values. Patients were further classified as nondippers if their day to night BP difference was below 10% [4]. We investigated a simple predictor for ambulatory hypertension and nondipping pattern because it is not practical to perform ABPM in all obese children. We believe the LDL-C:HDL-C and TC:HDL-C ratios will be simple and useful predictors for the nighttime hypertension and the indication of APBM in clinical practice, particularly in obese children.

We found that some of the ambulatory BP parameters are significantly higher in obese children compared to their nonobese peers. Despite a nonsignificant difference, the frequency of nighttime hypertension is higher in obese than nonobese children. In the literature, there is no study comparing ambulatory BP parameters between obese and nonobese children. The other question is the relationship between the homeostasis model assessment of insulin resistance (HOMA-IR) and nighttime hypertension. We found positive correlations between HOMA-IR and nighttime BP values. However, logistic regression analysis revealed no association between the two. In other words, HOMA-IR is not a predictor for nighttime hypertension. Hvidt et al. [5] reported similar results in obese children and adolescents.

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