Letter to the Editor:"Association of TSH with cardiovascular disease risk in overweight and obese children during lifestyle intervention".

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The Journal of Clinical Endocrinology & Metabolism 102: 4658-4659, 2017.

We read with interest the paper by Rijks et al. (1) concerning the possibility that in overweight and obese children, subclinical hypothyroidism causing an elevated raised cholesterol might underpin the increased risk of developing a cardiovascular disease later in life. Their conclusions are based mainly on the correlation analysis performed before and after weight loss and on the observation that a decrease in cholesterol and thyroid-stimulating hormone (TSH) levels were followed by an improvement of the cardiovascular risk factors after weight loss. These authors suggest, therefore, that TSH might be considered an intermediary factor between an altered lipid profile and the cardiovascular disease, suggesting a beneficial effect of a substitutive treatment with thyroxine in obese children with raised TSH. Although their results are superimposable to what we have recently published (2), we believe that the nature of both our studies just show associations, as Rijks et al. themselves admit, and association does not actually mean causality. In fact, a association does not actually mean causality. In fact, a recent paper confirms that it is unclear whether the associations of subclinical hypothyroidism with cardiovascular disease are mediated through lipid metabolism or through other mechanisms (3).

Furthermore, the primary role of cholesterol in the cardiovascular disease has been recently questioned. Contrary to prevailing literature, in fact, systematic reviews and meta-analyses showed no excess of cardiovascular risk associated with the intake of saturated fat (4), and available evidence from randomized controlled trials did not support the hypothesis that a serum cholesterol-lowering diet translates into a lower risk of death from coronary heart disease or all-cause mortality (5,6).

There is no evidence from the adult literature, furthermore, that a raised TSH is a cause of cardiac dysfunction (7), nor that there is an improvement in survival or cardiovascular morbidity following levothyroxine therapy, apart from some beneficial effects on lipid profiles and left ventricular function (8). In addition, the long-term Impact of levothyroxine on metabolic outcomes in hyperthyrotropinemia children remains still unclear. As last point, we must be aware that formulas that are used to assess the cardiovascular risk factors, such as the atherogenic index (total cholesterol/high density-lipoprotein cholesterol) and the triglycerides/high density-lipoprotein cholesterol ratio, contain cholesterol as a factor, a fact that obviously introduces a strong bias. Altogether, we believe that we must be cautious before introducing the concept that all obese children with a raised TSH should be treated with thyroxin, even also because TSH decreases with weight loss only, avoiding useless treatments.Because only longitudinal long-term studies might clarify this point, providing responses in 30 to 40 years, we believe that other tools must be looked for to clarify whether these children should be treat or not.