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Obesity, Dyslipidemia, and Sleep Disorders

Complexity Requires Complementary Analysis

To the Editor:

We read with great interest the recent article by Toyama et al1 in CHEST (March 2013), which dealt with the association between sleep apnea, sleep duration, and serum lipid profile. First, we would like to congratulate the authors on carrying out an important study of dyslipidemia and sleep disturbances and their recognition of the importance of these conditions, given their significant global prevalence. Today’s modern lifestyle can cause several health concerns, resulting from sedentarism, inadequate eating habits, and sleep deprivation, thus constituting a global public health

Figure 1. Meta-analysis of randomized controlled trials evaluating the effects of probiotics on the incidence of ventilator-associated pneumonia. RR = risk ratio.
problem. However, we believe some additional considerations should be mentioned.

Despite the good experimental design, the distribution of individuals among the different professional fields was not clear, nor were their nutritional profiles. Grouping of individuals by job sector (eg, administrative/operational) could indicate the existence of risk factors to the health of employees, because of differences in the intensity of physical activity required for the work. Physical exercise and healthy eating habits directly improve quality of life in patients with dyslipidemia. Although the authors clearly reported the limitations of the study, we suggest the use of questionnaires to relate levels of physical exercise and eating habits to the disease and to control for the influence of these factors. Similarly, the observation of biochemical parameters could provide relevant results, because obstructive sleep apnea (OSA) is a precursor of various metabolic disorders, among other conditions. The main biochemical markers altered in these conditions are leptin, cytokines, interleukins, tumor necrosis factors, and C-reactive protein. These markers are related to obesity, inflammatory responses, hypertension, and a primitive.1,5

In addition, complete polysomnography can provide valuable data beyond those provided by actigraphy and questionnaires. This evaluation permits the quantification of sleep efficiency and architecture, which can help elucidate the effects of disease on sleep. Moreover, a study to verify the relation between OSA and dyslipidemia should be carried out in patients undergoing treatment with continuous positive airway pressure. The use of this clinical intervention enables evaluation of the impact of treatment of OSA on dyslipidemia. In conclusion, we recognize the importance of this study, which provides a thorough look at the consequences of global problems such as obesity and sleep disorders, because the study was performed in overachievers, in whom these global problems mainly occur.

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Response

To the Editor:

We were honored to receive the thoughtful letter from Mr Polesel and colleagues regarding our article. Although we believe that our results support the effects on dyslipidemia of CPAP treatment of obstructive sleep apnea, which have been reported, they pointed out the remaining issues. Our opinions concerning their suggestions are as follows.

First, we collected some data on the lifestyle of the patients, such as alcohol consumption, sleeping pill use, and types of duties, by asking the participants. However, few data that enabled estimating the daily calorie balance or dietary habits were provided. Manual laborers made up a small percentage of the participants because the surveyed company was in a service industry, and we did not take the job type into consideration. It may require great efforts to collect such data in detail in an epidemiologic survey, but it would be important in a further study. Second, we used the blood sample data from the health examination to evaluate the metabolic states biochemically. Inflammation markers and adipokines are generally not measured in routine blood examination, so we could not investigate the associations of these markers with lipid metabolism in this study design. Finally, there is no doubt that polysomnography is the best method to assess sleep efficiency and sleep architecture. However, we wanted to assess sleep under usual lifestyle conditions. It is considered that actigraphy provides an acceptably accurate estimate of sleep patterns in normal, healthy adult populations, and the unattended type 3 monitoring was reported to be reliable under the specific conditions in which our study was conducted. In addition, as we previously reported, inter scorer and night-to-night reliability of respiratory disturbance index were excellent (interclass correlation coefficient of 0.98 and 0.95, respectively). It remains unsolved whether polysomnography in the laboratory or a portable system in the usual lifestyle conditions is better.

Mr Polesel and colleagues have shown clearly what should be investigated in the future, and we quite agree with them. Indeed, the relationships among lipid metabolism, obesity, and daily life, including quantity or quality of sleep, are very complicated, and it seems to be difficult to unravel them. Further studies are required to solve these issues.

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