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Obstructive sleep apnea syndrome could be a significant risk factor for the development of type 2 diabetes mellitus

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Some cross-sectional design studies had already shown an association between obstructive sleep apnea syndrome and type 2 diabetes mellitus, yet there are not enough findings concerning a prospective, longitudinal pattern of association between these two conditions. The Japanese investigators of CIRCS (the Circulatory Risk in Communities Study) aimed to examine prospectively the relationship of type 2 diabetes mellitus with the most important parameter (or surrogate marker) of the obstructive sleep apnea syndrome which is the measurement of nocturnal hypoxia.

It was a large prospective study, enrolling 4398 community residents, aged 40-69 years, all participants in different sleep investigation studies between 2001 and 2005. By polysomnography (including pulse-oximetry), intermittent nocturnal hypoxia was detected and defined as the number of episodes of oxygen desaturation by ≤3% per hour. This condition is considered mild for 5 to 15 detected episodes and moderate-to-severe for >15 episodes per night recording. On the other hand, type 2 diabetes mellitus was defined by fasting serum glucose ≥126 mg/dl (7 mmol/l), non-fasting serum glucose ≥200 mg/dl (11,1 mmol/l) and/or initiation of glucose-lowering medication or insulin therapy.

By the end of 2007, 92,2% of the participants had been followed up. A multivariable-adjusted hazard ratio for developing type 2 diabetes was 1.26 (0.91–1.76) among those with mild nocturnal intermittent hypoxia and, even greater, 1.69 (1.04–2.76) among those with moderate-to-severe nocturnal intermittent hypoxia (p=0.03 for trend).

The authors concluded that nocturnal intermittent hypoxia, as the main marker of the obstructive sleep apnea syndrome, was associated with increased risk of developing type 2 diabetes among middle-aged Japanese. Modern therapeutic methods for obstructive sleep apnea syndrome (as continuous positive airway pressure), along with other well known lifestyle and pharmaceutical measurements, could play an important role for the prevention of diabetes in those patients. ❑

Comment on a paper:

I. Muraki et al (for the CIRCS investigators) – Nocturnal intermittent hypoxia and the development of type 2 diabetes: the Circulatory Risk in Communities Study (CIRCS). *Diabetologia* 2010; 53:481-488