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Title: Independent association between nocturnal intermittent hypoxemia and metabolic dyslipidemia

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Body: Background: There is growing evidence from animal models that intermittent hypoxemia (IH) may induce dyslipidemia. Altered lipid metabolism may contribute to the increased cardiovascular risk observed in obstructive sleep apnea (OSA). In this multisite cross-sectional study, we tested the hypothesis of an independent association between nocturnal IH and dyslipidemia in OSA. Methods: Fasting serum lipid levels were measured in 2,081 patients (638 females) undergoing nocturnal recording for clinical suspicion of OSA. Multivariate regression analyses were performed to evaluate the independent associations between oxygen desaturation index (ODI) and lipid profile after adjustment for potential confounders including components of the metabolic syndrome (MS) or MS itself. Adjusted odds ratio (OR) for metabolic dyslipidemia (MD) (triglycerides [TG]≥150 mg/dL and high-density lipoprotein cholesterol [HDL-c]≤50 mg/dL for women and ≤40 mg/dL for men) according to quartiles of ODI were determined by logistic regression. Results: Total cholesterol and LDL cholesterol were not associated with ODI. In contrast, nocturnal IH and OSA severity were associated with higher TG levels and lower HDL-c levels after adjustment for confounding factors. The association between ODI and TG and HDL-c was independent of the MS. Adjusted OR (95% confidence intervals) for MD were 1 (reference), 1.56 (1.24 to 1.96), 1.72 (1.29 to 2.29), and 1.93 (1.55 to 2.41) for ODI≤7, >7 to ≤18, >18 to ≤38, and >38, respectively (P<0.0001 for linear trend).

Conclusions: Nocturnal IH is independently associated with MD that may predispose OSA patients to a higher risk of cardiovascular disease.