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Title: Effects of APOE genotype and hypoxia on plasma lipids in obstructive sleep apnoea

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Body: Rationale: There is increasing evidence that intermittent hypoxia resulting from obstructive sleep apnoea (OSA) is independently associated with dyslipidemia. Nevertheless, no data exist on potential links between OSA-related dyslipidemia and susceptibility genes of dyslipidemia in such patients. Our aim was to study the effects of apoliprotein E (APOE) genotype and hypoxia on atherogenic dyslipidemia in patients with OSA. Methods: 519 clinically stable subjects prospectively recruited at the tertiary referral teaching hospital underwent full polysomnography. APOE gene polymorphisms were assessed using real-time PCR. Findings: In all APOE genotype groups, triglycerides were higher in patients with quartile (Q) 2-4 of oxygen desaturation index (ODI) compared to those with Q1 ODI. In contrast, apolipoprotein B levels were higher in patients with Q2-4 ODI compared to Q1 ODI only in ε2 carriers and ε3ε3 homozygous group but not among ε4 carriers. After adjustment for sex, age, BMI, smoking, diabetes, and statin use, only APOE genotype($p=0.009$) and ODI ($p<0.001$) independently predicted serum triglyceride levels ($R2=0.148$). Similarly, both APOE genotype ($p=0.001$) and ODI ($p=0.003$) independently predicted serum ApoB levels($R2=0.104$). Conclusion: Present findings suggest that the adverse effects of OSA on serum lipids may be genotype-specific, and suggest the possibility of interaction between APOE genotype and hypoxia on triglyceride and apolipoprotein B levels. Funding: APVV-0134-11, VEGA 1/0111/12, Slovakia.