



# Circulating microparticles from patients with obstructive sleep apnea enhance vascular contraction: mandatory role of the endothelium

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Résumé en  
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Obstructive sleep apnea (OSA) is characterized by repetitive apnea-hypopnea cycles during sleep associated with oxygen desaturation and sleep disruption. We evaluated the role of circulating microparticles (MPs) from patients with OSA in the regulation of vascular function. MPs from whole blood from patients with OSA or control subjects were injected i.v. into mice. Injection of MPs from patients with OSA induced ex vivo vascular hyperreactivity in aortas with functional endothelium but, in contrast, hyporeactivity in vessels without functional endothelium. Vascular hyperreactivity was blunted in the presence of a nitric oxide synthase inhibitor alone or combined with the cyclooxygenase inhibitor indomethacin. MPs from patients with OSA reduced endothelial nitric oxide synthase activity and nitric oxide production, increased aortic cyclooxygenase-1 and cyclooxygenase-2 expression, and increased thromboxane A(2) and prostacyclin production. Blockade of thromboxane A(2) receptor did not affect the serotonin response in arteries from OSA MP-treated mice. A superoxide dismutase mimetic reduced the vascular hyperreactivity induced by MPs from patients with OSA but had no effect on contraction in vessels from control and non-OSA MP-treated mice. These data provide evidence that circulating MPs from patients with OSA induce ex vivo vascular hyperreactivity with the obligatory role of the endothelium and subtle interactions between the nitric oxide and cyclooxygenase pathways and metabolites. These results highlight the participation of MPs in vascular dysfunction associated with OSA.

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