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Peripheral augmentation index and vascular inflammation in autosomal dominant polycystic kidney disease.

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Abstract

BACKGROUND: Cardiovascular disease is the leading cause of premature mortality in autosomal dominant polycystic kidney disease (ADPKD). We examined peripheral augmentation index (AIx) as a measure of systemic vascular function and circulating markers of vascular inflammation in patients with ADPKD.

METHODS: Fifty-two ADPKD patients with hypertension and estimated glomerular filtration rate (eGFR) <60 mL/min/1.73 m(2), 50 ADPKD patients with hypertension and eGFR ≥60 mL/min/1.73 m(2), 42 normotensive ADPKD patients with eGFR ≥60 mL/min/1.73 m(2) and 51 normotensive healthy controls were enrolled in this study. AIx was measured from peripheral artery tone recordings using finger plethysmography. Serum levels of soluble intercellular adhesion molecule (ICAM)-1, vascular cell adhesion molecule-1, P-selectin, E-selectin, soluble Fas (sFas) and Fas ligand (FasL) were measured as markers of vascular inflammation.

RESULTS: AIx was higher in all three patient groups with ADPKD compared to healthy controls ($P < 0.05$). AIx was similar between the normotensive ADPKD patients with eGFR ≥60 mL/min/1.73 m(2) and hypertensive ADPKD patients with eGFR <60 mL/min/1.73 m(2) ($P > 0.05$). ICAM, P-selectin, E-selectin and sFas were higher and FasL lower in all ADPKD groups compared to controls ($P < 0.05$). ICAM, P-selectin and E-selectin were similar between the normotensive ADPKD patients with eGFR ≥60 mL/min/1.73 m(2) and hypertensive ADPKD patients with eGFR < 60 mL/min/1.73 m(2) ($P > 0.05$). According to multiple regression analysis, predictors of AIx in ADPKD included age, height, heart rate and mean arterial pressure ($P < 0.05$). Vascular inflammatory markers were not predictors of AIx in ADPKD.

CONCLUSIONS: Systemic vascular dysfunction, manifesting as an increase in AIx and vascular inflammation is evident in young normotensive ADPKD patients with preserved renal function. Vascular inflammation is not associated with elevated AIx in ADPKD.

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