

# Differences in noninvasive vascular indices between patients of preserved renal function with and without diabetes mellitus

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## Abstract

**Purpose:** Impairment of the endothelial function and increased thickness of the carotid arterial wall are known to be surrogate markers for cardiovascular accidents. The measurement of brachial artery flow-mediated dilation (FMD) is a representative noninvasive evaluation of the endothelial function. Chronic kidney disease and diabetes mellitus (DM) are important risk factors for atherosclerotic diseases. The aim of this study was to define the differences in these noninvasive vascular indices between patients of preserved renal function with and without DM.

**Subjects and Methods:** The estimated glomerular filtration rate (eGFR), brachial artery FMD and mean carotid intima-media thickness (mean IMT) were measured in 64 patients (M/F 41/23, mean 60 years). The differences in these vascular indices in relation to renal function were examined between the patients with and without DM.

**Results and Discussion:** eGFR was positively correlated with FMD, and negatively correlated with age, systolic blood pressure (SBP) and mean IMT. In patients with impaired renal function (eGFR<60 mL/min/1.73m<sup>2</sup>), age, SBP and mean IMT were significantly higher, and FMD was significantly lower than those in patients with preserved renal function (eGFR>60 mL/min/1.73m<sup>2</sup>). There were no differences in FMD and mean IMT between patients of impaired renal function with and without DM. However, FMD was significantly lower, and mean IMT was significantly higher in diabetic patients with preserved renal function as compared to those in non-diabetic patients with preserved renal function.

**Conclusions:** Diabetic patients with preserved renal function exhibited impairment of the endothelial function and increased carotid IMT as compared to non-diabetic patients with preserved renal function. Early detection of alteration in these noninvasive vascular indices could be important to prevent atherosclerotic vascular disorders in diabetic patients with preserved renal function.

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## Keywords

Atherosclerosis, Endothelial function, Flow-mediated dilation (FMD), Diabetes mellitus (DM), Chronic kidney disease (CKD).

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