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Original Article

Impact of Diabetes Mellitus on Peripheral Vascular Disease Concomitant with Coronary Artery Disease

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Abstract:

**Background:** The aim of this study was to evaluate the impact of diabetes mellitus (DM) on peripheral vascular disease (PVD) in patients with coronary artery disease (CAD).

**Methods:** A total of 13702 consecutive patients who underwent coronary artery bypass grafting (CABG) at Tehran Heart Center between January 2002 and March 2007 were included in this study. The demographic data, PVD, and outcome of these patients were reviewed. CABG patients before surgery were detected for PVD (stenosis  $\geq 70\%$  in the abdominal aorta; renal, carotid, and iliac arteries; or any other peripheral vascular system) with physical examination and past medical history. The suspected cases of PVD were, thereafter, confirmed via Doppler sonography or invasive angiography.



**Results:** This study recruited 4344 diabetic patients (mean age  $59.30 \pm 8.7$  years) and 9358 non-diabetic patients (mean age  $58.42 \pm 9.9$  years). The diabetics were significantly older and had a higher incidence of PVD (2.7% vs. 1.8%), female gender, hypertension, renal failure, smoking, and dyslipidemia than the non-diabetics ( $P < 0.05$ ). There was no significant difference between the two groups with regard to family history and left main disease. Also, the mean ejection fraction (EF) was  $48.85\% \pm 10.4$  and  $49.35\% \pm 10$ . In the patients with and without DM, respectively; and the difference was significant ( $P = 0.008$ ). The in-hospital mortality rate (mortality over a 30-day post-operative period) was 1.8% in the diabetics and 0.7% in the non-diabetics ( $P < 0.001$ ). In the multivariate analysis, PVD, left main disease, age, female gender, and EF were significant in the development of mortality amongst the diabetic patients with a respective odds ratio of 4.17, 5.54, 1.03, 2.86, and 0.95 ( $P \leq 0.050$ ). In the multivariate logistic regression analysis, PVD was significantly higher in the diabetics than in those without DM (OR=1.283, 95% CI: 1.001- 1.644;  $P = 0.049$ ). In the diabetic patients, carotid (1.13% vs. 0.83%), subclavian (0.05% vs. 0.02%), femoral (0.18% vs. 0.09%), renal (0.62% vs. 0.25%), and tibialis (0.16% vs. 0.06%) arteries had a higher incidence of stenosis than those in the non-diabetics.

**Conclusion:** We conclude that in diabetic patients with concomitant CAD, special attention must be directed towards the diagnosis of PVD using physical examination, Doppler sonography; and where needed, CT-angiography or invasive angiography. Also, in risk assessment, the presence of PVD should be strongly considered for CAD patients.

Keywords:

Diabetes mellitus . Peripheral vascular disease . Coronary artery disease

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