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Lower Extremity Amputations and Risk for Adverse Cardiovascular Events in Patients with Diabetes - A Population-Based Matched Cohort Study

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Background/Introduction:

The diabetic foot syndrome (DFS) is a micro- and macrovascular disease, often resulting in lower extremity amputation. DFS including amputations have been proposed to be a marker of cardiovascular morbidity and mortality. However data on major adverse cardiovascular events (MACE) from large population-based cohorts are scarce.

Methods:

This cohort study used administrative data from the Swiss Federal Statistical Office including hospitalizations in Switzerland from January 1, 2012, through December 31, 2018. Adult patients with diabetes who underwent a lower extremity amputation were propensity-matched (1:1) with diabetic patients not undergoing amputation. The primary endpoint MACE was a composite of being admitted to hospital for acute myocardial infarction (AMI), ischemic stroke, or heart failure (HHF). Secondary endpoints included the single items of the composite. Interventions were stratified as above-knee, below-knee or below-ankle amputations.

Results:

Baseline characteristics were balanced between the two groups. During the 7 year period, diabetic patients undergoing lower extremity amputation had an odds ratio of 1.16 (95% CI 1.11 to 1.22; p<0.001) for MACE. The risk for MACE increased with the extent of amputation: below-ankle OR 1.10 (95% CI 1.04 to 1.16; p=0.001), below-knee OR 1.28 (95% CI 1.18 to 1.39; p<0.001), and above-knee OR 1.31 (95% CI 1.19 to 1.44; p<0.001), respectively. Higher risks for MACE were mainly driven by increased rates of AMI: OR 1.60 (95% CI 1.50 to 1.72; p<0.001) and stroke: OR 1.32 (95% CI 1.18 to 1.48; p<0.001) but not by HHF: OR 0.99 (95% CI 0.94 to 1.04; p=0.76).

Conclusion:

Diabetic patients undergoing lower extremity amputation are at increased risk of adverse cardiovascular events. Our results emphazise the need for further optimization of cardiovascular risk factors in patients with DFS.