Impact of admission glucose on the immediate and long-term prognosis of patients with troponin-positive ACS

Authors:
I Bayraktarova, E Naseva, E Trendafilova, A Aleksandrov, A Bankova, S Georgieva, V Grigorov, E Dimitrova, H Yordanova, E Kostova, H Mateev, G Hristova, I Petrova, P Tasovska, N Gotcheva,
1National Heart Hospital, Cardiology Department - Sofia - Bulgaria, 2Medical University of Sofia, Department of Public Health - Sofia - Bulgaria,

Topic(s):
Acute Coronary Syndromes – Epidemiology, Prognosis, Outcome

Citation:

Introduction: Patients with acute coronary syndromes (ACS) who have diabetes mellitus have increased mortality in comparison to non-diabetics. It is yet debatable if admission glucose per se has an additional prognostic value.

Purpose: We aimed to evaluate the effects of admission blood glucose levels and presence of diabetes (together and separately) on the course of the hospital stay and on long-term prognosis in patients with troponin-positive ACS.

Methods: We performed retrospective analysis in 403 consecutive patients with troponin-positive ACS at a mean age of 65.5 ± 11.7 years, of whom 141 (35%) had known diabetes at presentation. We divided the patients in three groups according to admission blood glucose, using the values of 7.8 mmol/l and 11.0 mmol/l as separation points. With admission glucose below 7.8 mmol/l were 49.9%, and above 11.0 mmol/l - 23.1% of patients.

Results: There was no significant difference in the frequencies of the main risk factors in the three groups of patients according to admission blood glucose, except for the frequency of diabetes mellitus which became more frequent with the rise of admission glucose (<=0.001). Smoking and a family history of ischaemic heart disease were less frequent in patients with higher glucose (<=0.018 and <=0.014, respectively). Higher glucose was connected to higher values of admission and maximal reached troponin I during the hospital stay (<=0.013 and <=0.002 respectively), lower left ventricular ejection fraction (p=0.001) and worse kidney function (p=0.001). There were no significant differences in the rate of angiography or successful interventional therapy performed, nor in the characteristics of the angiographic findings between groups. Despite that, patients with higher glucose at admission were more likely to present with atrial fibrillation (<=0.002) or to have signs of heart failure during the stay (<=0.001), as well as heart rhythm disturbances (<=0.001), mechanical complications (<0.001) and bleeding (<=0.015), without a significantly different rate of performed blood transfusions (<=0.14). Followed up at the third month after the index hospitalisation, patients with higher glucose at index admission were less likely to have received staged revascularisation of all significant coronary artery stenoses (<=0.002). During a median follow-up of 1248.5 days, 71 patients died, with median survival of 1620 days. There was no significant differences in the Kaplan-Meier curves of survival when patients were grouped by admission glucose. After a correction for the presence of known diabetes, elevated glucose at admission became a significant predictor of worse long-term prognosis, but only for patients with diabetes and not for non-diabetics. Cox regression analysis wielded the same results.

Conclusion: Despite the correlation between admission blood sugar and in hospital complications, blood glucose at admission was only a long-term survival factor for patients with known diabetes.