Anemia increases long-term mortality in patients undergoing conventional coronary angiography - The ECAT registry

Authors:
B Balcer¹, I Dykun¹, S Hendricks¹, F Al-Rashid¹, M Totzeck¹, T Rassaf¹, AA Mahabadi¹, ¹University hospital Essen - Essen - Germany.

On behalf: ECAT registry

Topic(s):
Coronary Artery Disease and Comorbidities

Background: Anemia is a frequent comorbidity in patients with coronary artery disease (CAD). Besides a complemental effect on myocardial oxygen undersupply of CAD and anemia, available data suggests that it may independently impact the prognosis in CAD patients. We aimed to determine the association of anemia with long-term survival in a longitudinal registry of patients undergoing conventional coronary angiography.

Methods: The present analysis is based on the ECAD registry of patients undergoing conventional coronary angiography at the Department of Cardiology and Vascular Medicine at the University Clinic Essen between 2004 and 2019. For this analysis, we excluded all patients with missing hemoglobin levels at baseline admission or missing follow-up information. Anemia was defined as a hemoglobin level of <13.0g/dl for male and <12.0g/dl for female patients according to the world health organization’s definition. Cox regression analysis was used to determine the association of anemia with morality, stratifying by clinical presentation of patients. Hazard ratio and 95% confidence interval are depicted for presence vs. absence of anemia.

Results: Overall, data from 28,917 patient admissions (mean age: 65.3±13.2 years, 69% male) were included in our analysis (22,570 patients without and 6,347 patients with anemia). Prevalence of anemia increased by age group (age <50 years: 16.0%, age ≥80 years: 27.7%). During a mean follow-up of 3.2±3.4 years, 4,792 deaths of any cause occurred (16.6%). In patients with anemia, mortality was relevantly higher as compared to patients without anemia (13.4% vs. 28.0% for patients without and with anemia, respectively, p<0.0001, figure 1). In univariate regression analysis, anemia was associated with 2.4-fold increased mortality risk (2.27-2.55, p<0.0001). Effect sizes remained stable upon adjustment for traditional risk factors (2.38 [2.18-2.61], p<0.0001). Mortality risk accountable to anemia was significantly higher for patients receiving coronary interventions (2.62 [2.35-2.92], p<0.0001) as compared to purely diagnostic coronary angiography examinations (2.31 [2.15-2.47], p<0.0001). Likewise, survival probability was slightly worse for patients with anemia in acute coronary syndrome (2.70[2.29-3.12], p<0.0001) compared to chronic coronary syndrome (2.60[2.17-3.12], p<0.0001). Interestingly, within the ACS entity, association of anemia with mortality was relevantly lower in STEMI patients (1.64[1.10-2.44], p=0.014) as compared to NSTEMI and IAP (NSTEMI: 2.68[2.09-3.44], p<0.0001; IAP: 2.67[2.06-3.47], p<0.0001).

Conclusion: In this large registry of patients undergoing conventional coronary angiography, anemia was a frequent comorbidity. Anemia relevantly influences log-term survival, especially in patients receiving percutaneous coronary interventions. Our results confirm the important role of anemia for prognosis in patients with coronary artery disease, demonstrating the need for specific treatment options.
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