

**Effect on Outcomes and Exercise Performance of Anemia in Patients With Aortic Stenosis Who Underwent Transcatheter Aortic Valve Replacement** (Am J Cardiol 2015; 115: 472-479)

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**Introduction**

Transcatheter aortic valve replacement (TAVR) has been associated with reduced mortality and improved overall functional status and quality of life compared with medical treatment. However, a substantial proportion of patients fail to improve their functional status and quality of life after TAVR. The objectives of this study were to determine the causes and impact of anemia and hemoglobin level on functional status, physical performance, and quality of life in the pre-procedural evaluation and 6-month follow-up.

**Methods**

The study included 438 consecutive patients who underwent TAVR from May 2007 to December 2013 in a single institution. Blood samples were obtained within 2 weeks before procedure, daily during at least 72h after the procedure, at hospital discharge, and at 6-month follow-up. Anemia was diagnosed according to the definition of the World Health Organization (hemoglobin <12 g/dl in women and <13 g/dl in men). Since December 2011, the causes of anemia were systematically assessed in TAVR candidates. Functional status and quality of life outcomes were assessed by means of the New York Heart Association (NYHA) class, the 6-minute walk test (6MWT), the Duke Activity Status Index (DASI) score, and the Kansas City Cardiomyopathy Questionnaire (KCCQ).

**Results**

Before TAVR, anemia was encountered in 282 patients (64.4%). A potentially treatable cause of anemia was detected in 90.4% of patients and was attributed to iron deficiency in 53% of them. The occurrence of anemia was an independent predictor of poorer performance in the 6MWT, a lower DASI score, and KCCQ overall, clinical, and social limitation scores ( $p < 0.05$  for all). A lower hemoglobin level was associated with a higher prevalence of NYHA class III to IV ( $p < 0.001$ ) and correlated negatively with the results of all functional tests ( $p < 0.02$  for all). At follow-up, anemia was found in 62% of patients and was associated with poorer performance in the 6MWT ( $p = 0.023$ ). A lower hemoglobin level after TAVR was a predictor of poorer NYHA class ( $p = 0.020$ ) and correlated negatively with the distance walked ( $r = -0.191$ ,  $p = 0.004$ ) and DASI score ( $r = -0.158$ ,  $p = 0.011$ ) at 6-month follow-up.

**Discussion**

Anemia was very common in TAVR candidates and attributed to iron deficiency in more than half of them. The presence of anemia and lower hemoglobin levels were associated with poorer functional status before and after the TAVR procedure. These results highlight the importance of implementing appropriate measures for the diagnosis and treatment of this frequent co-morbidity to improve the outcomes of TAVR candidates.

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