Medical Xpress

Study: Blood transfusion associated with increased risk of death for patients with heart attack

December 24 2012

A meta-analysis of 10 studies suggests that receipt of a blood transfusion among patients with myocardial infarction (heart attack) was associated with increased all-cause mortality compared with not receiving a blood transfusion during heart attack, according to a report published Online First by *Archives of Internal Medicine*.

Therapeutic measures including anticoagulation and antiplatelet drugs have "revolutionized" the approach to acute coronary syndrome and improved clinical outcomes. However, some of these therapies may also increase the risk for bleeding, which can lead to patients developing anemia during their hospital stay and requiring blood transfusion, according to the study background.

Saurav Chatterjee, M.D., of Brown University and Providence Veterans Affairs Medical Center, Rhode Island, and colleagues conducted a review of studies published between January 1966 and March 2012. Ten studies, including 203,665 participants, were selected for analysis. Only one study was a randomized trial, while the others were observational studies.

"Analyses of blood transfusion in myocardial infarction revealed increased all-cause mortality associated with a strategy of blood transfusion vs. no blood transfusion during myocardial infarction (18.2 percent vs. 10.2 percent), with a weighted absolute risk increase of 12

percent," the authors comment.

Other statistical analyses suggest that blood transfusion was associated with a higher risk for mortality independent of baseline hemoglobin level, nadir hemoglobin level and change in hemoglobin level during the hospital stay. Blood transfusion also appeared to be associated with a higher risk for subsequent myocardial infarction (risk ratio, 2.04), according to the study results.

"In conclusion, this meta-analysis provides evidence that rates of all-cause mortality and subsequent myocardial infarction are significantly higher in patients with acute myocardial infarction receiving blood transfusion. Additional outcomes data are needed from randomized clinical trials that investigate important outcomes with adequate sample size and with low risk for bias," the authors conclude.

In a related commentary, Jeffrey L. Carson, M.D., of the University of Medicine and Dentistry of New Jersey, New Brunswick, and Paul C. Hébert, M.D., of the Ottawa Hospital Research Institute, Canada, write: "Do blood transfusions kill more patients with an acute myocardial infarction than anemia? Chatterjee and colleagues would have you believe that they do. We remain unconvinced."

"What might we take away from this systematic review? The authors remind us that patients with an acute myocardial infarction are often anemic and receive red blood cell transfusion. However, because of its many limitations, as physicians, we should not use the results of this review to justify or limit the use of red blood cells," they continue.

"For researchers and decision makers, we can now appreciate how little reliable information is available to inform clinical and policy decisions involving red blood cell transfusions in patients with acute coronary syndrome. Given that real risks and potential benefits exist as to how we

choose to use the valuable resource of blood transfusion, we believe that high-quality research is long overdue," they conclude.

More information: *Arch Intern Med*. Published online December 24, 2012. doi:10.1001/2013.jamainternmed.1001
Arch Intern Med. Published online December 24, 2012. doi:10.1001/jamainternmed.2013.2855

Provided by JAMA and Archives Journals

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