Blood Loss After Phlebotomy Linked to Anemia

BY MARY ANN MOON

FROM ARCHIVES OF INTERNAL MEDICINE

Blood loss from diagnostic blood testing during hospitalization is substantial and has been linked to anemia in patients with acute myocardial infarction, in a study of 17,676 subjects.

One in five patients developed moderate to severe hospital-acquired anemia, and they had a mean estimated phlebotomy volume of 173.8 mL – the equivalent of half a unit of whole blood. Twelve percent of the study subjects lost more than 300 mL to blood draws during the course of their hospitalization, said Dr. Adam C. Salisbury of Saint Luke's Mid America Heart and Vascular Institute, Kansas City, Mo., and his associates.

"Our findings are likely generalizable to other populations of seriously ill medical patients," they noted.

If further research establishes that minimizing blood loss from phlebotomy prevents anemia and improves patient outcomes, there would be broad implications for all hospitalized patients. Strategies to minimize blood loss, such as using pediatric instead of adult blood tubes or filling standard 4-mL adult tubes with only 1-2 mL of blood, would be widely adopted, Dr. Salisbury and his colleagues added.

They explored the relationship between diagnostic blood testing and the risk of hospital-acquired anemia in MI patients because blood draws have been associated with increased need for transfusions in this patient population. The researchers used an electronic medical record database that detailed the frequency and type of laboratory testing as well as patients' hemoglobin levels throughout hospitalization for acute MI. The database covered 57 hospitals during a recent 8-year period.

The study cohort comprised all patients with acute MI, excluding those who already had anemia at admission and those who underwent coronary artery bypass grafting, because both the etiology and outcomes of anemia differ from those of non-CABG patients.

The data did not include exact amounts of blood drawn for every test. The investigators estimated these amounts from the types of tests that were run, assuming that only the minimal blood volume needed to run the required tests was drawn and that no blood was wasted at the blood draws.

Twenty percent of the study cohort (3,551 patients) developed moderate to severe anemia during hospitalization. Mean hemoglobin values declined in all patients, but they declined to a greater degree in those who developed anemia (-3.9 g/dL), compared with patients who didn't develop anemia (-1.6 g/dL).

"The estimated mean blood loss from phlebotomy was nearly 100 mL higher over the course of hospitalization among patients who developed moderate to severe anemia, compared with those who did not (173.8 mL vs. 83.5 mL)," the researchers said (Arch. Intern Med. 2011 Aug. 8 [doi:10.1001/archinternmed.2011.361]).

The average amount of blood drawn for laboratory testing varied significantly across hospitals, from a low of 53 mL to a high of 109.6 mL. The amount of blood typically drawn at a hospital significantly correlated with the incidence of anemia in its patients.

In a preliminary analysis, every 50 mL of blood drawn was associated with an 18% increase in the risk of hospital-acquired anemia. That risk persisted and remained robust after the data were adjusted to account for potential confounders. When the data were broken down by day of hospitalization, the risk of developing anemia was highest on the first hospital day (10.5%), then remained relatively constant at 2.8%-4.5% through 10 days of hospitalization.

"Since most diagnostic evaluation and therapeutic interventions occur early during acute MI hospitalization, it is likely that much of the blood taken later during hospitalization represents routine, scheduled laboratory draws that could lead to ongoing blood loss." Indeed, blood loss was particularly high among patients who had longer hospital stays.

Factors that contribute to the development of hospital-acquired anemia – such as patient age and sex, chronic kidney disease, and acute inflammation – are not modifiable. But clearly, providers can minimize phlebotomy, Dr. Salisbury and his associates said.

This study was retrospective and observational and so could not establish causality. Prospective randomized trials are needed to establish that the blood draws caused the anemia, and to determine whether limiting the number of blood draws and the volume of blood removed for diagnostic testing can prevent hospital-acquired anemia, they noted. ■

VITALS

Major Finding: Of patients with acute MI, 20% acquired anemia during hospitalization, and those who did so lost approximately 174 mL of blood to draws for laboratory testing, compared with only 84 mL for patients who did not develop anemia. Every 50 mL of blood drawn was associated with an 18% rise in risk for anemia.

Data Source: A retrospective, observational study of blood draws for laboratory testing and hemoglobin values in 17,676 patients hospitalized at 57 U.S. medical centers for acute MI during an 8-year period.

Disclosures: Dr. Salisbury and two associates were funded in part by an award from the American Heart Association Pharmaceutical Round Table. The investigators reported ties to numerous drug companies.

Post-MI Secondary Prevention Lacking in RA Patients

BY SARA FREEMAN

FROM THE ANNUAL EUROPEAN CONGRESS OF RHEUMATOLOGY

LONDON – Patients with rheumatoid arthritis who have had a heart attack for the first time do not appear to be getting medications recommended to prevent a further cardiovascular event, according to the findings of a large Danish study.

VITALS

Major Finding: Odds ratios for the prescription of aspirin, a statin, and beta-blockers 30 days after a first MI were 0.75, 0.68, and 0.76, respectively.

Data Source: Danish registry study of 66,389 patients – 875 (1.3%) with RA – who had a first MI between 2002 and 2009.

Disclosures: Dr. Lindhardsen and Dr. Schett had no conflicts of interest to declare.

Aspirin, statins, and beta-blockers – cardioprotective medications that are given as the standard of care to most patients immediately following a myocardial infarction – were all less frequently prescribed to patients with rheumatoid arthritis (RA) than to members of the general patient population.

Indeed, 1 month after an MI, the odds ratios for the prescription of these drugs were 0.75 (95% confidence interval, 0.63-0.90) for aspirin, 0.68 (95% CI, 0.57-0.82) for a statin, and 0.76 (95% CI, 0.63-0.91) for beta-blockers. These results did not change greatly at follow-ups of 3 months, 6 months, or 1 year.

The increased risk of cardiovascular disease in RA is well known and could result from a number of causes, including the presence of classical risk factors such as dyslipidemia and hypertension, possible adverse effects of RA treatment, and an accelerated atherosclerotic process driven by the high levels of inflammation characteristic of the rheumatic disease.

"What's not been considered, [however,] and perhaps the simplest explanation, is whether or not there is undertreatment of [RA] patients," Dr. Jesper Lindhardsen, of the cardiology department at Gentofte University Hospital, Copenhagen, said at a press briefing.

To determine whether patients with RA were being given standard cardioprotective medications after a first MI, he and his colleagues analyzed data from several Danish patient registries, including those giving prescription records, details of comorbidities, and income.

The study population consisted of 66,389 patients who had had a first heart attack between 2002 and 2009. Of these, 875 (1.3%) had RA. The median age was 72.6 years for RA patients and 69.4 years for patients without RA.

At baseline, the use of cardioprotective medications by patients with and without RA were relatively similar or the same, at 27% and 25.1%, respectively, for aspirin; 19.1% and 19.1% for a statin; 23.9% and 22.5% for a beta-blocker; and 3.3% and 2.2% for clopidogrel.

Although aspirin, statin, and beta-blocker use was later found to be lower in the RA patients than in the non-RA patients throughout the early post-MI period, there was no significant difference in the prescription of clopidogrel at 1, 3, or 6 months or at 1 year.

Commenting on the findings in an interview, Dr. Lindhardsen conceded that these data raise more questions than they answer. For one thing, it's not known what medications patients were taking before they had their heart attack, which could influence the findings.

'The risk of cardiovascular disease in RA is similar to diabetes, but people sometimes forget this.'

DR. SCHETT

Dr. Georg Schett, who is chief of rheumatology at the University of Erlangen-Nuremberg, Germany, but was not involved in the study, said the findings illustrate that the high cardiovascular risk in patients with RA is still not being taken seriously enough.

Speaking at a press conference, Dr. Schett said that "the risk of cardiovascular disease in RA is similar to diabetes, but people sometimes forget this."

Indeed, Dr. Lindhardsen and his colleagues recently published data showing that RA is associated with the same risk of MI as diabetes (Ann. Rheum. Dis. 2011;70:929-34).

With regard to these post-MI data, Dr. Lindhardsen stressed the importance of communication between the cardiologist discharging a patient and the rheumatologist responsible for the patient's long-term care to ensure that standard cardioprotective medications are being used.

"We have quantitative data. Now we need more qualitative data," Dr. Lindhardsen observed in an interview. The next steps are to try to determine the reasons RA patients get fewer prescriptions for these standard post-MI drugs, he said. ■