MedicalXpress

Trial of bivalirudin during angioplasty reports mixed results

March 17 2015

Patients with acute coronary syndrome undergoing angioplasty who received the anticoagulant drug bivalirudin did not show significant improvements in either of two co-primary endpoints—a composite of rate of death, heart attack or stroke at 30 days, or a composite of those events plus major bleeding—as compared to patients receiving standard anticoagulation therapy, according to a study presented at the American College of Cardiology's 64th Annual Scientific Session. However, bivalirudin was associated with significantly lower rates of bleeding complications and death, two of the study's secondary endpoints.

Study authors said the reason the study did not meet its co-primary composite endpoints is likely related to the high prevalence of heart attacks, which occurred in about 8.5 percent of patients in both groups and likely diluted the benefits reflected in the rates of death and bleeding. In addition, the study had a higher-than-usual bar for statistical significance due to its inclusion of two co-primary endpoints instead of only one.

Patients in the control group were given the widely used anticoagulant unfractionated heparin, as well as glycoprotein IIb/IIIa inhibitors, another class of anticoagulants, at the physician's discretion.

"We saw an impressive reduction in bleeding with bivalirudin compared to the control, which likely contributed to the reduced mortality in this group," said Marco Valgimigli, M.D., Ph.D., associate professor of cardiology and senior interventional cardiologist at the Erasmus

University Medical Center in the Netherlands and the study's lead author. "I believe the study shows bivalirudin can provide additional benefits to patients as compared to unfractionated heparin in current medical practice."

Angioplasty is performed to clear blocked arteries in more than 1 million people in the United States each year. Patients are given anticoagulants to prevent the formation of dangerous blood clots during the procedure.

The study, called the Minimizing Adverse Hemorrhagic Events by Transradial Access Site and Systemic Implementation of AngioX Program (MATRIX), randomized more than 7,200 patients undergoing angioplasty at 78 hospitals in four European countries to bivalirudin or standard coagulation therapy. All participants had acute coronary syndrome, a condition that includes the two types of heart attack—ST-elevation myocardial infarction and non-ST elevation myocardial infarction—or unstable angina, a type of severe chest pain that is due to the buildup of plaque in the heart's arteries.

Bivalirudin was associated with a significantly lower rate of death, which occurred in 1.7 percent of patients receiving bivalirudin and 2.3 percent of patients in the control group. This reduction is likely the result of a significantly lower rate of bleeding complications, seen in 1.4 percent of patients receiving bivalirudin and 2.5 percent of patients in the control group, Valgimigli said. The difference in bleeding complications was especially pronounced for bleeding beyond that near the catheter insertion site, a more dangerous complication than bleeding that is confined to the catheter insertion site.

The study comes on the heels of a series of controversial and inconsistent bivalirudin trials. In a key departure from its predecessors, the MATRIX trial allowed interventional cardiologists to decide whether to give glycoprotein IIb/IIIa inhibitors as a complement to unfractionated

heparin in control patients, whereas previous studies either required or forbade the use of these drugs. Glycoprotein IIb/IIIa inhibitors are widely used by U.S. surgeons and rarely used in Europe, so neither requiring nor forbidding the use of these drugs is an accurate reflection of a real-world setting in which these drugs are used part of the time.

"Our study really comes at the right moment to re-evaluate the role of bivalirudin," Valgimigli said. "Glycoprotein IIb/IIIa inhibitors were used in about one-quarter of the control patients in our study, at the operator's discretion, which is a better reflection of current practice than the control protocol used in previous studies." Glycoprotein IIb/IIIa inhibitors were allowed only as a backup strategy for patients randomized to receive bivalirudin.

In addition, the new trial randomized patients to receive their angioplasty via a catheter inserted in an artery in either the arm or the groin, thus accounting for the potential effects different catheter access points may have had on the results of previous studies. The effects of bivalirudin were consistent regardless of whether patients received their catheter in the arm or the groin.

An important aspect of the study is that participants had a higher-than-expected rate of adverse events due to their high risk profile. This speaks to the fact that patients were representative of the typical population being treated in current practice and unlike many other studies, high risk patients were not excluded from participating in the study.

The study is limited in that it relied on a composite endpoint and it was not powered for mortality or major bleeding alone.

MATRIX investigators are separately reporting results related to catheter access site. In addition, analysis is ongoing to investigate potential effects of the length of bivalirudin administration. Those results will be

reported at a later date.

Provided by American College of Cardiology