Proximal Protection Spurs STEMI Resolution

BY JEFF EVANS
Senior Writer

WASHINGTON — Deployment of a proximal protection device during primary percutaneous coronary interventions for acute myocardial infarction may significantly increase the percentage of patients who immediately resolve ST-segment elevation, according to the results of a randomized trial.

The Proxis embolic protection system was not associated with any safety problems in the trial, called PREPARE (Proximal Embolic Protection in Acute MI and Resolution of ST-Elevation), which randomized 284 patients at two centers in the Netherlands and Canada. These patients had begun to experience ST-segment elevation myocardial infarction (STEMI) symptoms for 6 hours or less before their arrival at the hospital.

"It is well known that there is a good correlation between ST segment resolution and the results of percutaneous coronary intervention [PCI], in terms of myocardial salvage and long-term outcome," said Dr. Karel T. Koch of the Academic Medical Center at the University of Amsterdam.

The device also has been used successfully for embolic protection in saphenous vein graft interventions, but the safety and effectiveness of the device for treating acute MI had not been reported prior to the PREPARE trial, except in a registry study of 172 patients (Rev. Cardiovasc. Med. 2007;8:160-6).

During a procedure with the Proxis system, an interventionalist places the system's flexible catheter in a position proximal to the target lesion and then uses CO_2 to inflate a sealing balloon on the tip of the catheter. This prevents antegrade flow during the intervention, after which stagnated blood and emboli are aspirated through the catheter.

In the PREPARE trial, complete ST-segment resolution (greater than 70%) was immediately apparent during PCI in a significantly greater percentage of patients who received protection with the Proxis system (86 [66%] of 129) than in control patients who went without embolic protection (67 [50%] of 135). But from 30 minutes out to 2 hours, there was no significant difference in ST-segment resolution between the groups, said Dr. Koch, who presented the results at Transcatheter Cardiovascular Therapeutics 2008.

Dr. Koch, the lead investigator of the trial, received research support from St. Jude Medical, which manufactures the Proxis system.

No differences could be found between the groups in the secondary end points of post-PCI, Thrombolysis in Mycardial Infarction–graded flow, myocardial blush grade, and angiographic signs of distal embolization.

The rates of another secondary end point, major adverse events at 30 days (composite of death, MI, target vessel revascularization, and stroke), were similar between Proxis-protected patients (4%) and control patients (7%). The trial was underpowered to detect any difference in this end point.

"If you have an early advantage, you can see an improvement in hard outcomes. This study was not big enough to look at that. But we do know from a large body of literature over the past 2 decades that earlier is better," said Dr. David J. Cohen, director of cardiovascular research at St. Luke's Mid America Heart Institute, Kansas City, Mo.

Dr. Cohen reported receiving research support from Cordis Corp. and Boston Scientific Corp., both of which manufacture distal protection devices. He also is a consultant to Medtronic, which also produces a distal protection device.

At baseline, the patients had a mean age close to 60 years. Prior to randomization, all of the patients received 70 U/kg of unfractionated heparin, 300 mg of aspirin, and 600 mg of clopidogrel (Plavix). A core cardiac catheterization lab assessed the results without knowing the patients' treatment statuses.

The Proxis system was successfully placed in 94% of attempted patients. These patients underwent predilatation and stenting significantly more often than control patients (87% vs. 76%, respectively). They also underwent direct stenting significantly less often than control patients (11% vs. 19%). Close to 40% of patients in each group received platelet glycoprotein IIb/IIIa inhibitors. Thrombi were confirmed in 75% of patients who underwent percutaneous coronary intervention with the Proxis system.

JEFF EVANS/ELSEVIER GLOBAL MEDICAL NEWS

Immediate STEMI resolution was significantly greater in patients who received proximal protection during PCI, said Dr. Karel T. Koch.

The device was used nearly exclusively on totally occluded vessels, which makes it tough to assess the size of the clot, Dr. Cindy L. Grines, director of the cardiac catheterization laboratories at William Beaumont Hospital, Royal Oak, Mich., commented at the meeting. "If you don't know the clot size, you don't really know who needs distal embolic protection …because total occlusion can be due to a very large atherosclerotic burden and a tiny bit of clot, or it can be due to minimal plaque and a large clot. I would assume that these patients are going to react differently to proximal or distal protection devices."

Dr. Grines also wondered whether "proximal protection can be applicable to less experienced centers," especially given the fact that patients who received proximal protection had a median puncture to balloon time that was only 3 minutes longer than it was among control patients, at 17 and 14 minutes, respectively.

Dr. Grines disclosed that she serves on speakers bureaus for catheter-manufacturing companies, some of which make distal protection devices, and that she has consulted and received research funds from them. ■

Prolonged Bivalirudin Infusion Reduced PCI-Related MIs

BY JEFF EVANS
Senior Writer

WASHINGTON — A prolonged infusion of bivalirudin during complex or multivessel percutaneous coronary interventions produced a significantly lower rate of procedure-related myocardial infarctions than did an intraprocedural infusion alone, without increasing the rate of major bleeding, in a small randomized trial of 178 patients with stable or unstable angina.

Previous studies have reported slightly higher rates of myocardial infarction or acute stent thrombosis in patients treated with bivalirudin, compared with patients who received heparin and a glycoprotein IIb/IIIa inhibitor, especially when there is an inadequate level of platelet inhibition provided by thienopyridines before the procedure, according to Dr. Bernardo Cortese of the department of interventional cardiology at the Ospedale della Misericordia, Grosseto, Italy.

In the PROBI VIRI study (Prolonged Bivalirudin Infusion Versus Intraprocedural Only Randomized Study), Dr. Cortese and his colleagues sought to determine if a prolonged infusion of bivalirudin for 4 hours after PCI (at 0.25 mg/kg per hour) could lower the rates of these events.

Procedure-related MIs occurred significantly less often in patients who received prolonged bivalirudin.

DR. CORTESE

"We think that a prolonged infusion of bivalirudin in a specific subset of patients could be a reasonable choice to treat these patients with complex PCI and possibly emergent or urgent PCI to prevent stent thrombosis," Dr. Cortese said at Transcatheter Cardiovascular Therapeutics 2008. Dr. Cortese is a consultant to Medicines Co., which manufactures bivalirudin.

To be randomized in the trial, patients were required to have stable or unstable angina and at least one complex lesion or a planned multivessel PCI.

The enrolled patients had a mean age of about 67 years; 40% had unstable angina, and 80% had a complex coronary lesion.

Procedure-related MIs occurred significantly less often in patients who received prolonged bivalirudin than in those who received bivalirudin only during the procedure (6.8% and 16.7%, respectively). These MIs were defined by a rise in the level of CK-MB (the MB isoenzyme of creatine kinase) to three or more times the upper limit of normal.

Patients on prolonged bivalirudin achieved lower, yet statistically similar, rates of major adverse cardiac events at 30 days and 6 months (1.1% and 10.2%, respectively) than did patients who received bivalirudin only during the procedure (3.3% and 16.7%, respectively). Each group experienced similar rates of in-hospital bleeding described as major (about 1%) or minor (about 3%). No cases of stent thrombosis occurred.

The results raise the issue of "what should we do with stent thrombosis? Is it longer bivalirudin? Or is it more potent antiplatelet therapies? Those are the sort of pieces that this study doesn't answer, but at least it gives us a flavor of what might be considered," Dr. E. Magnus Ohman, director of the program for advanced coronary disease at Duke University, Durham, N.C., commented after the study was presented.

"The issue may be not prolonging the infusion, but rather focusing on the platelet activation component where we actually know from some scientific areas that this may be our best approach."

Dr. Cortese and Dr. Ohman both said that the conclusions that can be drawn from the study are limited by its small sample size and the use of radial access sites in more than 83% of the patients. Access sites in the radial artery have a much lower rate of bleeding than do those in the femoral artery. Significant reductions in bleeding events from femoral access sites have been a major part of the advantage ascribed to bivalirudin in other studies. ■