Placement of type of pump within the aorta prior to PCI not associated with improved outcomes

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High-risk patients undergoing a coronary procedure such as placement of a stent who electively received an intra-aortic balloon pump (a device that can help improve blood flow) prior to the procedure did not experience a significantly lower overall rate of events such as heart attack, revascularization or death, according to a study in the August 25 issue of *JAMA*.

Percutaneous coronary intervention (PCI; procedures such as balloon angioplasty or stent placement used to open narrowed coronary arteries) in patients with impaired left ventricular function can be associated with a significant increased risk of illness or death, and patients with extensive coronary artery disease who may have a diminished reserve to withstand the consequences of ischemia or arrhythmias that may occur during PCI. "In these circumstances, vital hemodynamic support can be provided by an intra-aortic balloon pump (IABP; a special pump connected to a balloon-type device that is inserted into the descending aorta), which simultaneously augments coronary blood flow and decreases myocardial oxygen demand," the authors write. "Observational studies have previously reported that elective IABP insertion may improve outcomes following high-risk PCI. To date, this assertion has not been tested in a randomized trial."

Divaka Perera, M.D., M.R.C.P., of King's College London, and colleagues conducted the Balloon Pump-Assisted Coronary Intervention

Study (BCIS-1) to assess the efficacy and safety of elective IABP use in patients undergoing high-risk PCI. The randomized controlled trial was conducted in 17 tertiary referral cardiac centers in the United Kingdom between December 2005 and January 2009. Patients (n = 301) had severe left ventricular dysfunction and extensive coronary disease. The primary outcome measure was major adverse cardiac and cardiovascular events (MACCE; defined as death, heart attack, cerebrovascular event, or further revascularization at hospital discharge [up to 28 days]).

The researchers found that the primary end point of MACCE at hospital discharge occurred in 15.2 percent of the elective IABP group and 16.0 percent of the no planned IABP group, and all-cause mortality at 6 months was 4.6 percent and 7.4 percent, respectively. Predefined procedural complications occurred more often in the no planned IABP group (16 patients [10.7 percent]) than in the group undergoing elective IABP insertion (2 patients [1.3 percent]). The most common component of these complications was prolonged procedural hypotension (abnormally low blood pressure), which occurred in 13 patients in the group with no planned IABP insertion and 2 patients in the group with elective IABP insertion.

Major or minor bleeding occurred in 19.2 percent of the elective IABP group and 11.3 percent of the no planned IABP group. There was no difference between the groups in the incidence of major bleeding (5 and 6 patients, respectively), but there was more minor bleeding in the elective IABP group (15.9 percent) compared with the no planned IABP group (7.3 percent).

"The study did not demonstrate a difference in MACCE at hospital discharge and therefore does not support routine elective IABP insertion before high-risk PCI. However, 12 percent of patients who underwent PCI without elective IABP insertion required rescue IABP support, which highlights the importance of adopting a standby IABP strategy

when undertaking high-risk PCI," the authors conclude.

More information: JAMA. 2010;304[8]:867-874.