Off-Pump CABG Bests PCI in Cognitive Scores

BY BRUCE JANCIN

ORLANDO — Patients treated with off-pump coronary artery bypass graft surgery had significantly better long-term neurocognitive function than did those who got percutaneous coronary intervention in the first-ever randomized head-to-head comparison of the revascularization methods focusing on cognitive outcome.

At 7.5 years' follow-up in the Dutch multicenter Octopus Study, overall scores on a standardized neurocognitive test battery were significantly better in the off-pump coronary artery bypass (OPCAB) group, Dr. Jakub J. Regieli said at the annual scientific sessions of the American Heart Association.

The OPCAB group scored significantly higher on four of the seven cognitive domains measured: visual memory, motor capacity, divided attention, and learning. Scores on the other domains—reaction time, decision making, and working memory—also consistently favored the OPCAB patients, but the advantage fell short of statistical significance, said Dr. Regieli, a cardiology fellow at the University of Utrecht (the Netherlands).

But discussant Robert C. Robbins was not buying Octopus.

"I really have to question whether PCI would give worse neurocognitive function. I can tell you as a surgeon that if I had the choice of having a stent versus CABG, I'd take a stent every time—and I think I'd be smarter in the end," said Dr. Robbins, professor and chairman of the department of cardiothoracic surgery at Stanford (Calif.) University.

"This discussion is different than any

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DR. ROBBINS

I've ever participated in," he added. "You've got a cardiologist telling you how bad PCI is, and I'm a surgeon and I'm defending the results of PCI versus CABG."

There are sound reasons for a patient to opt for OPCAB rather than PCI—a lower repeat revascularization rate, vessels unsuitable for stenting—but an expectation of better cognitive outcome is not one of them, Dr. Robbins said.

The Octopus population comprised 280 low-risk patients with preserved left ventricular function, single-vessel disease, and a mean age of 60.

The composite cardiac end point of death, stroke, or MI occurred in 17.4% of the PCI group over the course of 7.5 years and was not significantly different, at 19.2%, in the OPCAB group. Mortality was 8.7% with PCI and 13.4% with OPCAB, a nonsignificant difference. But the 21.7% repeat revascularization rate in the PCI group was significantly higher than the 11.3% rate with OPCAB.

Manipulation of the aorta occurred in 100% of PCI patients but in only 15% of those who received OPCAB. That difference plays a key role in the Octopus investigators' interpretation of the cognitive outcome differences.

Imaging data show "that microemboli do occur during PCI," Dr. Regieli said. "Subclinical cerebral injury during repeated cardiac catheterization in the PCI-treated patients may have led to worse cognitive performance in that group."

Dr. Regieli added a caveat: PCI in Octopus was performed in the bare-metal stent era. Contemporary PCI with drug-eluting stents has a lower repeat revascularization rate, and that might well spell better neurocognitive performance.

None of the cardiac findings is really surprising, in Dr. Robbins' view. The neurocognitive results are a different matter. He noted that 25% of patients in the PCI group did not undergo neurocognitive testing, compared with 13% in the OPCAB group—a difference that could have influenced the results. Also, no baseline neurocognitive testing was done prior to revascularization.

More than 8 years ago, when Octopus was being planned, there was widespread high hope that OPCAB was the answer to the neurocognitive impairment that often follows CABG when performed on pump. But the pendulum has swung the other way. Most heart surgeons consider the Veterans Affairs Randomized On/Off Bypass (ROOBY) Study the definitive statement, according to Dr. Robbins.

ROOBY randomized 2,203 patients scheduled for CABG to OPCAB or on-pump surgery. No significant differences between the techniques were found in neurocognitive outcomes (N. Engl. J. Med. 2009;361:1827-37). And there has never been any evidence that on-pump CABG is associated with less neurocognitive impairment than PCI, he noted.

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