Research examines differences in rates of cardiac catheterization between New York State and Ontario

July 9 2013

The increased use of cardiac catheterization in New York relative to Ontario appears related to selecting more patients at low risk of obstructive coronary artery disease, with the subsequent diagnostic yield (i.e., the proportion of tested patients in whom disease was diagnosed) of this procedure in New York significantly lower than in Ontario, according to a study in the July 10 issue of *JAMA*.

"The continuing increase in health care expenditures is threatening the sustainability of the health care system and the economy of many developed countries. Debates among the public, physicians, funders, and policymakers have concentrated on how to provide better quality of care at a lower cost. In the United States, a study found that only 1 in 3 patients who received elective cardiac catheterization had obstructive coronary artery disease (CAD), which raises concerns about the necessity of cardiac procedures for many patients with stable CAD. According to these findings, one might reasonably conclude that a more selective use of cardiac catheterization should be implemented to reduce its associated cost and to improve its diagnostic efficiency," according to background information in the article.

"Previous cross-country comparison studies between the United States and Canada have highlighted large differences in the utilization of cardiac procedures because of different methods of incentivizing health care. Our group has previously shown that clinicians in New York State

(New York) perform twice as many cardiac catheterizations per capita as are performed in Ontario, which could be explained by a difference in the burden of CAD or by a difference in the patient selection process for procedures. Given the increasing focus on how best to use scarce health care resources, it is important to understand the reasons underlying the different utilization patterns and their associated implications," the authors write.

Dennis T. Ko, M.D., M.Sc., of the Institute for Clinical Evaluative Sciences, Toronto, Canada, and colleagues conducted a study to evaluate the extent of obstructive CAD and to compare the probability of detecting obstructive CAD among patients undergoing cardiac catheterization in New York and Ontario. The study included patients without a history of cardiac disease who underwent elective cardiac catheterization between October 2008 and September 2011. A total of 18,114 patients from New York and 54,933 from Ontario were included.

The observed rate of obstructive CAD was significantly lower in New York at 30.4 percent than in Ontario at 44.8 percent. In New York, 2.5 percent of patients who underwent cardiac catheterization were found to have left main stenosis, 5.2 percent had 3-vessel CAD, and 7.0 percent had left main or 3-vessel disease. In Ontario, patients were significantly more likely to have severe CAD; 5 percent had left main stenosis, 9.8 percent had 3-vessel coronary artery stenosis, and 13.0 percent had left main or 3-vessel disease.

Analysis of the data indicated that patients who received cardiac catheterization in New York had a significantly lower predicted probability of obstructive CAD than those in Ontario. "Overall, only 19.3 percent of patients in New York were predicted to have a greater than 50 percent probability of having obstructive CAD compared with 41.0 percent in Ontario. At the lowest-risk category, when the predicted probability of obstructive CAD was less than 15 percent, the proportion

of patients in this category was 15.1 percent in New York and 6.9 percent in Ontario. At the highest-risk spectrum, when the predicted probability of obstructive CAD was greater than 75 percent, the proportion of patients was 1.4 percent in New York vs 7.9 percent in Ontario."

The researchers also found that at 30 days, crude mortality for patients undergoing cardiac catheterization was slightly higher in New York at 0.65 percent (90 of 13,824) vs 0.38 percent (153 of 40,794) in Ontario. "However, this difference was driven primarily by higher mortality for patients without obstructive CAD in New York at 0.62 percent vs 0.27 percent in Ontario."

"Several groups have proposed using obstructive CAD rate as a potential quality indicator to enhance efficiency and improve quality. Our study lends support to these proposals as we demonstrated the ability to increase diagnostic yield of cardiac catheterization through improved patient selection."

More information: *JAMA*. 2013;310(2):163-169

Provided by The JAMA Network Journals