Research Highlights

Highlights from the latest articles in interventional cardiology

Endovascular repair of intact abdominal aortic aneurysm is safer than open repair

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Evaluation of: Jackson RS, Chang DC, Freischlag JA *et al.* Comparison of long-term survival after open vs endovascular repair of intact abdominal aortic aneurysm among Medicare beneficiaries. *JAMA* 307(15), 1621–1628 (2012).

Jackson *et al.* performed a retrospective analysis of 4529 patients over 65 years who underwent isolated repair of intact abdominal aortic aneurysm (AAA) between 2003 and 2007. A total of 703 patients underwent open repair and 3826 endovascular repair, and the mean and median follow-up time was 2.6 years. All-cause mortality and AAA-specific mortality were higher in the open-repair group compared with the endovascular repair group (89 vs 76 and 11.3 vs 2.8 per 1000 person-years; $p = 0.04$ and $p < 0.001$, respectively). After adjusting for emergency admission, age, calendar year, sex, race and comorbidities, open repair was more risky than endovascular repair. Compared with endovascular repair, open-repair patients stayed an average of 6.5 days longer in hospital and had a higher incidence of incisional hernia repair (12 vs 3 per 1000 person-years). Whereas there was no significant difference in rates of repeat AAA repair, incidence of 1-year readmission and lower-extremity amputation.

These data show that among older patients, endovascular repair of isolated intact AAA is safer than open repair and is associated with a decreased risk of all-cause mortality and AAA-related mortality.

Many left ventriculographies can be avoided

Evaluation of: Witteles RM, Knowles JW, Perez M *et al.* Use and overuse of left ventriculography. *Am. Heart J.* 163(4), 617–623 (2012).

Left ventriculography is the first imaging tool to obtain information regarding the left ventricular function and volume. It is still performed in most coronary angiography cases although modern noninvasive imaging techniques have been developed in the last decades with more accuracy and smaller risks. Witteles *et al.* retrospectively analyzed the data from the Aetna healthcare benefits database concerning patients who underwent coronary angiography in 2007. Of 96,235 patients who underwent coronary angiography, 78,705 patients (81.8%) received left ventriculography. They found that in 88% of those cases, the test was not necessary – of 37,149 patients with no reason to expect that their left ventricular volume or ejection fraction had changed had undergone an ejection fraction assessment by another modality within the previous 30 days. As many as 32,798 of those patients (88%) received a left ventriculography providing no additional information for the investigator. Witteles and colleagues conclude that in many cases, the left ventriculography can be avoided because an alternative imaging modality

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has recently been completed. To reduce the number of unnecessary left ventriculograms, it is important that, and would be very helpful and if, the medical societies would develop appropriate clinical practice guidelines.

Same outcome with on-pump or off-pump coronary artery bypass grafting in elderly patients

Evaluation of: Houlind K, Kjeldsen BJ, Madsen SN *et al.* On-pump versus off-pump coronary artery bypass surgery in elderly patients: results from the Danish On-pump versus Off-pump Randomization Study (DOORS). *Circulation* 125(20), 2431–2439 (2012).

Conventional coronary artery bypass grafting (CCABG), performed with the use of cardiopulmonary bypass, is relatively safe and can be performed with a moderately low rate of perio-operative complications in elderly patients. Off-pump coronary artery bypass grafting (OPCAB) is believed to reduce the number of major complications, especially in older patients, who are currently under-represented in clinical trials.

Houlind *et al.* performed a randomized, multicenter trial to compare the outcomes of CCABG with OPCAB in patients above 70 years of age. A total of 900 patients were included in this trial with a mean EuroScore of over five, indicating moderate-to-high risk. After 30 days, there was no significant difference in the combined end point of death, stroke or myocardial infarction, which occurred in 10.2% in the CCABG-group and 10.7% in the OPCAB-group (p = 0.83). At 6 months follow-up, mortality was 4.7% in the CCABG-group and 4.2% in the OPCAB-group (p = 0.75). Both groups reported significantly improved health-related quality of life. The authors conclude that CCABG and OPCAB in elderly patients have similar outcomes with regard to major morbidity or self-assessed, health-related quality of life.

No additional heparin needed during percutaneous coronary intervention under sufficient anticoagulation

Evaluation of: Kiviniemi T, Karjalainen P, Pietilä M *et al.* Comparison of additional versus no additional heparin during therapeutic oral anticoagulation in patients undergoing percutaneous coronary intervention. *Am. J. Cardiol.* 110(1), 30–35 (2012).

More and more patients with atrial fibrillation who are at moderate-to-high risk of thromboembolism receive percutaneous coronary intervention under continuing oral anticoagulation. Until now it has been unclear as to whether there is a need for additional administration of periprocedural heparins. Kiviniemi *et al.* investigated assessed bleeding complications and major adverse cardiac and cerebrovascular events in 414 consecutive patients undergoing percutaneous coronary intervention on long-term warfarin therapy for atrial fibrillation. A total of 196 patients were without any additional anticoagulation other than therapeutic oral anticoagulation (international normalized ratio: 2.0–3.5) and 218 patients received additional unfractionated heparin, low molecular weight heparin bolus or subcutaneous low molecular weight heparin. The study showed no differences in major adverse cardiac and cerebrovascular events (4.1 vs 3.2%; p = 0.79) or major bleeding (1.0 vs 3.7%; p = 0.11). There were fewer access-site complications in the group without the additional administration of heparin (5.1 vs 11.0%; p = 0.032). When adjusted for propensity score, patients with additional heparins had a higher risk of access-site complications (odds ratio: 2.6; 95% CI: 1.1–6.1; p = 0.022) without any increased risk of other adverse events. Kiviniemi *et al.* come to the conclusion that there is no need for further administration of heparin during percutaneous coronary intervention if sufficient oral anticoagulation is administered. Additional heparins may increase access-site complications in those patients.