Heartbeat: Highlights from the issue

Catherine M Otto

In this issue of ***Heart***, Dr. Bouri and colleagues (***see page 456***) reexamined the issue of the perioperative use of beta blockers in patients with an intermediate or high cardiovascular risk who are undergoing major non cardiac surgery. Unfortunately, the evidence base for current recommendations has been called into question because of allegations of research fraud in some of the main studies, which are excluded from this new meta-analysis of the relevant randomized controlled clinical trials. They found that although beta-blockers decreased the risk of non-fatal myocardial infarction, they increased the risk of stroke and hypotension with an overall 27% increase in mortality associated with initiation of beta blocker therapy before noncardiac surgery (see figure 1).

In an accompanying editorial, Drs. Vaishnava and Eagle argue that the final answer is not yet in. Other analyses of the pooled published data indicate that beta blockers may be beneficial. In addition, this meta-analysis does not apply to patients who are already taking beta-blockers for other reasons or to patients who are found to have significant heart disease during the pre-operative evaluation. Until new well-designed honest studies are completed, Drs. Vaishnava and Eagle recommend that physicians carefully consider the potential risks and benefits, timing, and dosage of any additional therapy in an individual patient undergoing major surgery.

In adults undergoing mitral valve replacement surgery, current guidelines recommend a bioprosthetic valve over a mechanical valve in patients age 65 years or older. This recommendation is based on the longevity of bioprosthetic valves in this age group and the avoidance of long term risks of warfarin anticoagulation that is required with a mechanical valve prosthesis. Despite this recommendation, in a cohort of 3862 patients in the UK National Institute for Cardiovascular Outcomes Research Adult Cardiac Surgery database, Dr. Dimarakis and colleagues (***see page 500***) found that 50% of

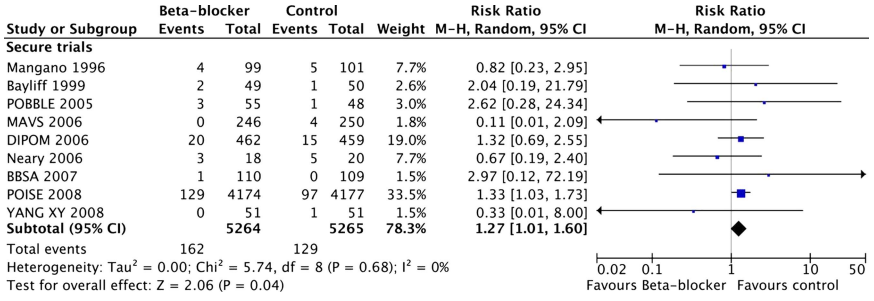

Figure 1 Meta-analysis of nine secure randomised controlled trials showing a significant increase in mortality with perioperative β-blockade.

adults over age 65 undergoing mitral valve replacement receive a mechanical valve. However, there was no difference in hospital mortality or mid-term survival (at a median of 4 years) comparing those who received a bioprosthetic versus mechanical valve, even in a propensity matched cohort. A bioprosthetic valve was chosen more often in older patients (79% of those aged over 80 years versus 30% of those age 65–70 years) and the proportion of bioprosthetic valves increased over time from in 28% in 2001 to in 69% in 2010 (see figure 2).

In the accompanying editorial, Drs. Rastogi and Rahimtoola (***see page 445***) suggest that choice of valve prosthesis be individualized, based on specific clinical factors and patient preferences even in older adults. In my view, we need to counterbalance those considerations with the recognition that a high level of warfarin anticoagulation is needed in patients with a mechanical mitral valve and that management of interruptions in warfarin therapy is difficult. In addition, the full risks of warfarin anticoagulation might only be evident on longer term followup; as these patients age the risk of bleeding will increase with increasing comorbidities, keeping the level of anticoagulation in the therapeutic range will be more challenging if dietary intake of

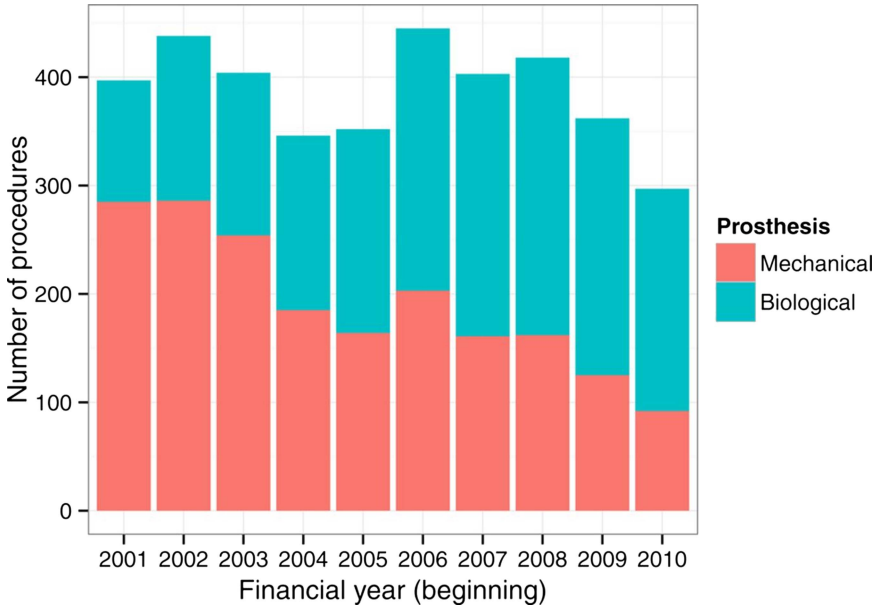

Figure 2 Number of mitral valve replacements (MVRs) performed each year stratified by prosthesis type.

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Vitamin K fluctuates and frailty will increase the risk of falls. If the option of valve-in-valve transcatheter valve implantation for failed bioprosthetic valves proves to be a durable option, this may tilt the balance even further in favor of a bioprosthetic valve in older adults.

A systematic review of the safety and efficacy of the MitraClip system for reduction in mitral regurgitant severity by a transcatheter approach (*see page 473*) brings together the data on this promising approach which has recently been approved in the US for treatment of primary mitral regurgitation in high risk surgical candidates. The role of this new approach in management of patients with severe mitral regurgitation due to mitral valve prolapse remains unclear given the low risk and excellent outcomes with surgical mitral valve repair at centers with expertise in this procedure. A more challenging clinical scenario is the patient with symptomatic heart failure due to left ventricular systolic dysfunction with severe secondary, or functional, mitral regurgitation despite optimal medical therapy. The Cardiovascular Outcomes Assessment of the MitraClip Therapy Percutaneous Therapy for High Surgical Risk Patients (COAPT) trial and the Randomized Study of the MitraClip Device in Heart Failure Patients With Clinically Significant Functional Mitral Regurgitation (RESHAPE-HF) both are currently in progress to address this issue but results will not be available for several years.

The Education in Heart article summarizes the many types of myocardial injury that can cause an elevated cardiac troponin value. This article also provides a practical approach to the patient with a suspected false positive troponin result including causes such as haemolysis of the blood sample or analytically false positive results. It also should be recognized that the increased sensitivity of the troponin test allows detection of early disease so that apparently "false positive" elevated troponin may in fact be a true positive and the first marker of underlying cardiac disease.

See if you can get the correct answer for the Image Challenge which ask you to determine the location of a defibrillator lead based on the chest radiograph and ECG findings.

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