Heartbeat: Highlights from the issue

Catherine M Otto

Aortic valve stenosis is prevalent in the elderly and valve replacement for severe symptomatic obstruction improves symptoms and prolongs life. However, some patients have persistent symptoms after intervention because the functional valve area of the prosthetic valve is too small for the patient's body size–a situation termed patient-prosthesis mismatch (PPM). The hemodynamics of PPM have been well described but the actual clinical impact of PPM is controversial. In this issue of *Heart*, Dr Price and colleagues (***see page 1099***) report that PPM was associated with decreased survival and persistent symptoms only in patients with a low left ventricular ejection fraction who were under age 70 years at the time of valve surgery. In older adults, although PPM was associated with impaired regression of LV hypertrophy, PPM was not associated with increased mortality or heart failure symptoms (figure 1). This data has important implications for clinical management suggesting that additional procedures to allow implantation of a larger prosthesis may not be necessary in older adults or in younger patients with normal left ventricular function. On *Heart* online you also can listen to a podcast of Phillippe Pibarot discussing some practical clinical points about patient-prosthesis mismatch with me.

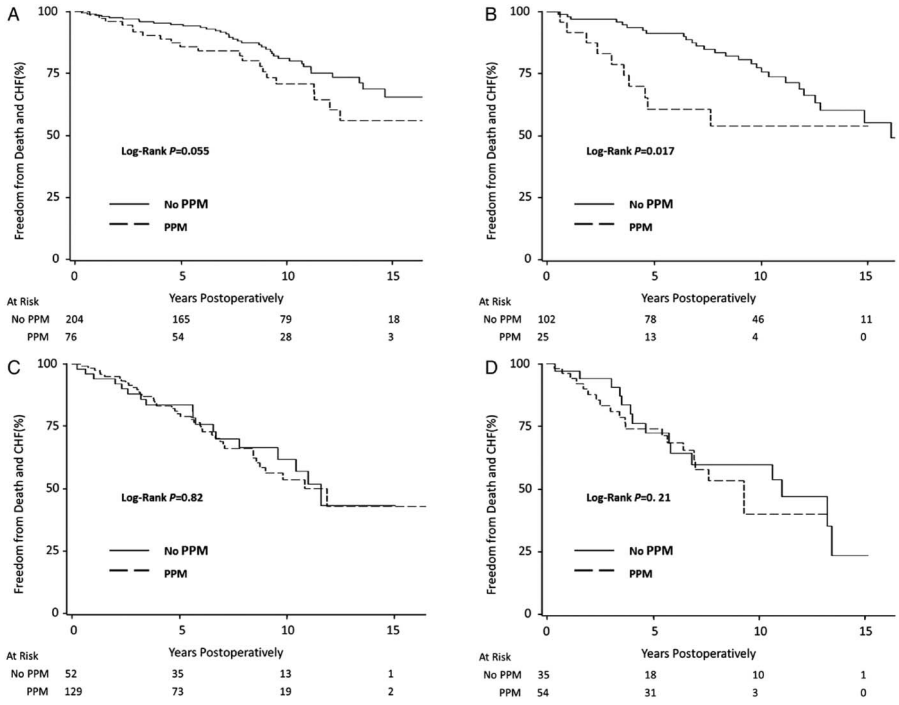

Figure 1 Effect of prosthesis-patient mismatch (PPM) on freedom from death and congestive heart failure (CHF). The effect of PPM on freedom from death and CHF after aortic valve replacement in patients (A) under age 70 with normal left ventricular function, (B) under 70 years of age with left ventricular dysfunction, (C) 70 years old and older with normal left ventricular function, and (D) 70 years old and older with left ventricular dysfunction.

At the other end of the age spectrum, cardiologists are increasingly caring for patients with congenital heart disease who have survived to adulthood thanks to the impressive advances in surgical repair and palliative for congenital heart disease over the past 50 years. The transition from a childhood with heart disease, followed in a pediatric environment, to young adulthood, with the patient (not the parents) being responsible for healthcare decisions and self-management is often challenging. In an effort to facilitate better long term outcomes in these patients, Dr. Mackie and colleagues (***see page 1113***) conducted a clinical trial comparing usual care to one-on-one teaching by a nurse for adolescents with moderate or complex congenital heart disease who were about to transition to the adult care setting. Even this simple intervention resulted in a significant improvement in cardiac knowledge, self-management and self-advocacy scores on a standarized questionnaire. In the accompanying editorial, Drs. Gurvitz and Saidi (***see page 1075***) emphasize that "Successful transition is not only about the transition of the paediatric patient to adult-oriented healthcare, but it is also about preparing for higher education and the workplace and the responsibilities that adulthood holds." They also suggest "We need to develop seamless, reproducible, dependable and integrated models to provide this transition." The current study is certainly a step in the right direction.

Cardiac arrest due to ventricular fibrillation continues to be the initial manifestation of coronary artery disease in a substantial number of patients. In The Myocardial Ischaemia National Audit Project (MINAP) database of over 48K patients with an ST-elevation myocardial infarction (STEMI), about 11% presented with cardiac arrest (CA) and almost 1/3 of these patients died on the day of CA (***see page 1125***). Compared to STEMI patients who did not suffer CA, STEMI patients with resuscitated CA continued to have a 4-fold increased risk of death during the initial hospitalization and those who survived to hospital discharge had an approximately 50% increased risk of death at 1 month. However, longer-term survival at 1 and 3.5 years was similar, regardless of the presence of absence of resuscitated CA. (figure 2)

In the accompanying editorial, Dr Swadron (***see page 1069***) suggests "Our current practice of closely monitoring patients who have been resuscitated from primary VF appears justified, even in the absence of heart failure or other comorbid conditions. It also appears clear that in the absence of such factors the placement of ICDs prior to discharge is unnecessary and may result in needless cost and risk." However, he also raises several questions that require additional research including whether STEMI patients who survive CA should be discharged with an automated external defibrillator (AED) or wearable cardiac defibrillator, particularly for the high-risk

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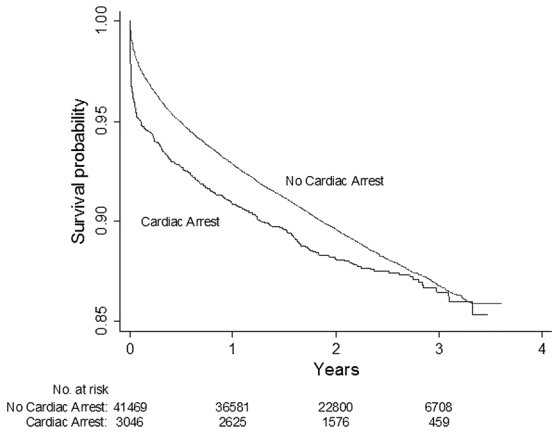

Figure 2 Kaplan–Meier plot of survival probability after discharge from hospital of patients with and without STEMI-associated cardiac arrest. STEMI, ST elevation myocardial infarction.

first month after discharge. This concern is especially relevant given the previous publication in Heart entitled "Public access defibrillation remains out of reach for most victims of out-of-hospital sudden cardiac arrest"[1]

The Education in Heart article (***see page 1133***) in this issue discusses the cardiac complications in patients undergoing chemotherapy for cancer, a common reason for cardiac consultation in clinical practice. Anthracyclines have a non-reversible cardiotoxic effect with risk proportional to the cumulative dose, potentiated by other agents such as trastuzumab. Reversible cardiotoxicity occurs with newer chemotherapy agents, such as bevacizumab (a vascular endothelial growth factor receptor antibody), sorafenib and sunitinib (tyrosine kinase inhibitors). In addition to prevention of cardiac toxicity by limiting the cumulative dose of chemotherapy and monitoring ventricular function, this article discuses management of chemotherapy induced cardiomyopathy, which is associated with a mortality rate as high as 60%.

Check out the Image Challenge (***see page 1112***) to see if you can make the diagnosis for these impressive echocardiographic images. The online videos are worth taking a look at too!

To cite Otto CM. *Heart* 2014;**100**:1067–1068.

Heart 2014;**100**:1067–1068.
doi:10.1136/heartjnl-2014-306303

REFERENCE

1 Deakin CD, Shewry E, Gray HH. Public access defibrillation remains out of reach for most victims of out-of-hospital sudden cardiac arrest. *Heart* 2014;100:8 619–23.