

# Heartbeat: Highlights from the issue

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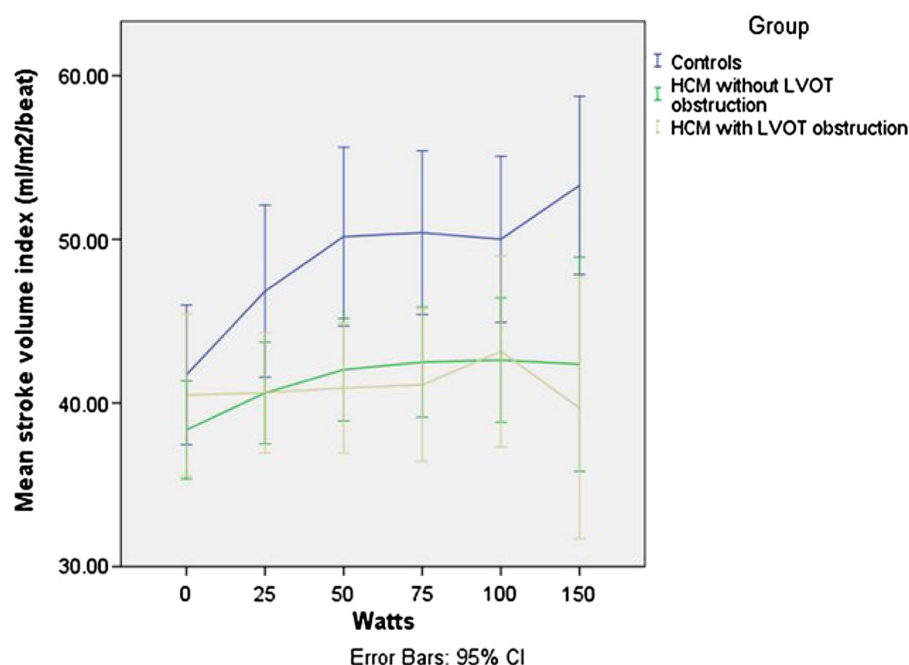
This issue of *Heart* has a group of articles about hypertrophic cardiomyopathy with two of these studies addressing exercise capacity. In a study from The Heart Hospital in London (See page 644 and figure 1) cardiopulmonary exercise testing showed a reduced peak oxygen consumption and cardiac index in 70 patients with hypertrophic cardiomyopathy compared to normal volunteers. Left ventricular outflow tract obstruction was present in 31% of patients at rest and an additional 14% had obstruction provoked by exercise. Compared to patients without obstruction, outflow obstruction at all levels of exercise was associated with an inability to augment stroke volume index and a higher oxygen consumption figure 1.

A separate study of 265 hypertrophic cardiomyopathy patients at the Stanford Center for Inherited Cardiac Disorders (See page 624) found that hypertrophic cardiomyopathy patients with a history of paroxysmal atrial fibrillation (11% of the total group) had a lower exercise tolerance and lower peak oxygen consumption compared to patients with no history of atrial fibrillation. The association between paroxysmal atrial fibrillation and exercise intolerance was significant even after adjusting for differences in age, sex and body mass index (OR 4.65, 95% CI 1.83 to 11.83,  $p=0.001$ ).

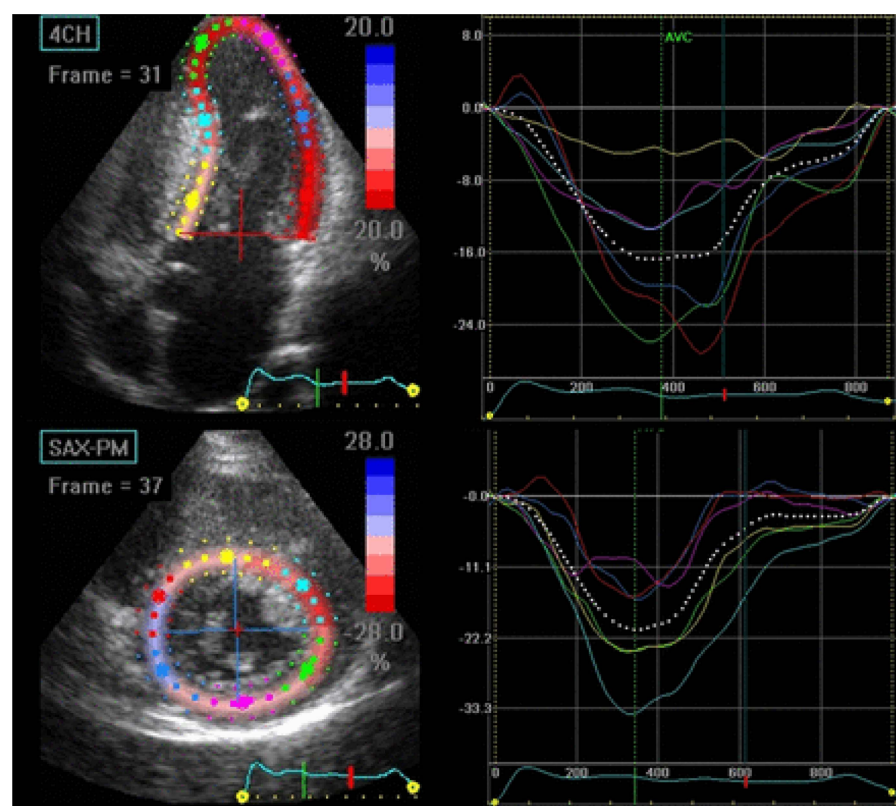
In an editorial commenting on both these papers, Dr. David Owens (See page 603) puts these new research findings into context, emphasizing that “within populations of patients with hypertrophy cardiomyopathy lays extreme genetic and physiologic heterogeneity” and that “it is clear that personalized medicine, including assessment of personal physiology, is not just a goal but necessary component of good patient care” in patients with hypertrophic cardiomyopathy.

The Education in Heart article by (See page 662) provides a useful approach to the differential diagnosis of left ventricular hypertrophy, including the specific features relevant to the diagnosis of hypertrophic cardiomyopathy. Another original research paper by Almaas and colleagues (See page 631 and figure 2) evaluated the noninvasive diagnosis of myocardial fibrosis in patients with obstructive hypertrophic cardiomyopathy using strain imaging.

Improved survival from out-of-hospital sudden cardiac arrest remains an



**Figure 1** Stroke volume index during bicycle exercise from 0 to 150 W in controls and patients with non-obstructive and obstructive hypertrophic cardiomyopathy.



**Figure 2** Strain by speckle-tracking echocardiography taken from a patient with obstructive hypertrophic cardiomyopathy. The upper picture shows longitudinal strain from apical 4-chamber view, and the lower shows circumferential strain from parasternal short-axis view.

important public health goal with use of an automated external defibrillator (AED) a key element in achieving that goal. However, in a retrospective review of all out of hospital sudden cardiac arrests in Hampshire (population 1.76 million) over a one year period, Professors Deakin, Shewry and Gray (*See page 619*) found that access to an AED was available in only 4.25% of cases and the AED was successfully used before arrival of the ambulance in only 1.74% of events. In the editorial comment by Drs. Eisenberg and Rea, (*See page 609*) we are reminded

that the likelihood of survival decreases by about 5 to 10% for every minute between patient collapse and defibrillation. Drs. Eisenberg and Rea suggest a shift in our thinking about how AEDs are deployed; instead of targeting only high-risk locations, the AED should be considered a “ubiquitous public safety device that should be available in almost every setting”. They go further in suggesting that we need a low cost economic model for AEDs, similar to fire detectors and fire extinguishers, along with better communication and public education.

The image challenge case in this issue has an online video supplement that highlights the echocardiographic findings. (*See page 657*).



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