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## **Reviews:**

### ***New England Journal of Medicine***

#### **[Unexpected Abrupt Increase in Left Ventricular Assist Device Thrombosis](#) \*\***

Randall C. Starling, M.D., M.P.H., Nader Moazami, M.D., Scott C. Silvestry, M.D., Gregory Ewald, M.D., Joseph G. Rogers, M.D., Carmelo A. Milano, M.D., J. Eduardo Rame, M.D., Michael A. Acker, M.D., Eugene H. Blackstone, M.D., John Ehrlinger, Ph.D., Lucy Thuita, M.S., Maria M. Mountis, D.O., Edward G. Soltesz, M.D., M.P.H., Bruce W. Lytle, M.D., and Nicholas G. Smedira, M.D. N Engl J Med 2014; 370:33-40 January 2, 2014 DOI: 10.1056/NEJMoa1313385

One none of us missed, surely, from Randy Starling. The big report on the rising thrombotic complications in the HMII patients in the recent past. Patients data was examined from 2003 - mid 2013.

A total of 72 pump thromboses were confirmed in 66 patients; an additional 36 thromboses in unique devices were suspected. Starting in approximately March 2011, the occurrence of confirmed pump thrombosis at 3 months after implantation increased from 2.2% to 8.4% by January 1, 2013. Before March 1, 2011, the median time from implantation to thrombosis was 18.6 months and from March 2011 onward, it was 2.7 months. The rate of pump thrombosis related to the use of the HeartMate II has been increasing at our centers and is associated with substantial morbidity and mortality.

We all went on to receive a letter meant to reassure us from Thoratec, but there is a general pervading feeling that something is truly different out there.

### ***The Journal of Thoracic and Cardiovascular Surgery***

#### **[Outcomes of extracorporeal life support for low cardiac output syndrome after major cardiac surgery](#) \***

Sung Jun Park, MD, Joon Bum Kim, MD, Sung-Ho Jung, MD, PhD, Suk Jung Choo, MD, PhD, Cheol Hyun Chung, MD, PhD, and Jae Won Lee, MD, PhD.

Of >9200 patients undergoing major cardiac surgery over a 6 year period from 2005-2011, 93 patients were treated with extracorporeal life support for post survival low cardiac output syndrome. High lactate level before ECLS is an independent predictor of mortality after ECLS, necessitating earlier ECLS implementations before profound lactic acidosis develops. Moreover, nafamostat mesilate should be considered as alternative to heparin to reduce the risk of bleeding in these high-risk patients. (J Thorac Cardiovasc Surg 2014;147:283-9)

#### **[Implantable physiologic controller for left ventricular assist devices with telemetry capability](#) \***

Siavash S. Asgari, MS, and Pramod Bonde, MD.

An interesting concept, very early in its development. This group has developed an LVAD physiological controller - novel, wirelessly powered, ultra-compact, implantable physiologic controller capable of running a left ventricular

assist device in a pulsatile mode with wireless power delivery. It uses high-quality factor resonant coupling technology to wirelessly transfer energy to power an LVAD. When used with electrocardiography synchronization, the controller allowed on-demand customization of operation with instantaneous flow and revolutions per minute changes, resulting in a pulsatile flow with adjustable pulse pressure. It has been used in vitro and in vivo for 2 weeks only so far. Interesting for future of rotary pumps.

## ***Journal of the American College of Cardiology***

### **[Increased Need for Right Ventricular Support in Patients With Chemotherapy-Induced Cardiomyopathy Undergoing Mechanical Circulatory Support Outcomes From the INTERMACS Registry \(Interagency Registry for Mechanically Assisted Circulatory Support\)](#)** \*

Guilherme H. Oliveira, MD, Matthias Dupont, MD, David Naftel, PhD, Susan L. Myers, BBA, Ya Yuan, BS, W.H. Wilson Tang, MD, Gonzalo Gonzalez-Stawinski, MD, James B. Young, MD, David O. Taylor, MD, Randall C. Starling, MD, MPH.

This study investigated the use of durable mechanical circulatory support (MCS) in patients with chemotherapy-induced cardiomyopathy (CCMP) and determine their outcomes and survival in comparison to that of other patients with end-stage heart failure treated similarly. Over 3800 patient with CCMP were treated with MCS from 2006-2011. Compared with patients with nonischemic cardiomyopathy and ischemic cardiomyopathy, patients with CCMP were overwhelmingly female (72% vs. 24% vs. 13%,  $p = 0.001$ ), had MCS more often implanted as destination therapy (33% vs. 14% vs. 22%,  $p = 0.03$ ), required more right ventricular assist device support (19% vs. 11% vs. 6%,  $p = 0.006$ ), and had a higher risk of bleeding ( $p = 0.001$ ). Survival of CCMP patients was similar to that of other groups. It concluded that CCMP patients treated with MCS have survival similar to other MCS patients despite more frequent need for right ventricular assist device support and increased bleeding risk.

## ***Circulation: Heart Failure***

### **[Prevalence and Prognostic Importance of Changes in Renal Function After Mechanical Circulatory Support](#)** \*

Meredith A. Brisco, MD, MSCE, Stephen E. Kimmel, MD, MSCE, Steven G. Coca, DO, MS, Mary E. Putt, PhD, ScD, Mariell Jessup, MD, Wilson W.H. Tang, MD, Chirag R. Parikh, MD, PhD and Jeffrey M. Testani, MD, MTR.

The primary goals of this analysis were to describe serial post-MCS changes in estimated glomerular filtration rate (eGFR) and determine their association with all-cause mortality - looked at >3300 patients in INTERMACS with serial creatinine available. Early post-MCS, eGFR improved substantially (median improvement, 48.9%;  $P < 0.001$ ) with 22.3% of the population improving their eGFR by  $\geq 100\%$  within the first few weeks. However, in the majority of patients, this improvement was transient, and by 1 year, eGFR was only 6.7% above the pre-MCS value ( $P < 0.001$ ). This pattern of early improvement followed by deterioration in eGFR was observed with both pulsatile and continuous-flow devices. Interestingly, poor survival was associated with both marked improvement and then worsening in eGFR.