patients was uneventful and all patients, except one, were discharged with improved NYHA class and ambulatory. Echocardiographic parameters of dysynchronous ventricles did not reach statistical significance, but several parameters including LV-PEP and IVMD showing time delay of cardiac contraction, tended to be improve, suggesting contribution to the satisfactory post-operative course.

**Conclusions** The acceptable outcome was demonstrated with our concept to recover the intraventricular and atrio-ventricular synchrony. Although difficult to establish the patient selection criteria for concomitant CRT and valvular surgery, our strategy is considered to be a feasible procedure to improve morbidity and mortality in patients with severe HF due to VHD.

**HEART FAILURE AND RHEUMATIC HEART DISEASE IN INDIA**

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Though rheumatic heart disease (RHD) is on the decline, it remains an important cause of heart failure (HF) in many developing countries including India. It is estimated that about 10%-15% of all HF in India is attributable to RHD. Indirect estimates from the recent Global Burden of Disease (GBD) Study indicate that the absolute number of patients with moderate to severe HF due to RHD is likely to be about 3 50 000 in India. Heart failure in RHD is due mainly to severe left-sided valve lesions or due to retractive pulmonary artery hypertension as a result of chronic and severe elevation of pulmonary venous pressures. Other causes of HF include severe primary tricuspid stenosis or regurgitation, and ventricular dysfunction due to involvement by the rheumatic process.

Management of HF in RHD is mainly surgical or intervention. In selected patients with dominant mitral stenosis (MS), timely percutaneous mitral commissurotomy provides durable relief. Balloon aortic and tricuspid valvotomy are useful in some patients with aortic and tricuspid stenosis (AS, TS). Transcatheter aortic valve replacement (TAVR) is not useful due to the rarity of isolated AS and young age of patients. Valve replacement performed for regurgitant lesions and calcific valves. Mitral valve repair, though recommended, is not possible in most patients with rheumatic mitral regurgitation. Due to late presentation, some patients with regurgitant lesions develop severe ventricular dysfunction, which may not reverse with valve replacement. These patients should receive long-term guideline-directed medical therapy.

**INTERVENTIONS TO PREVENT RIGHT HEART FAILURE IN PAH**

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Initial treatment strategy for pulmonary arterial hypertension (PAH) has changed from monotherapies to upfront combination therapies. Data from Japan Pulmonary Hypertension Registry (JAPHR), the first organised multi-centre registry for PAH in the country, provide data on real-world treatments and outcomes in Japanese patients.

From April 2008 to March 2013, 189 consecutive patients (108 treatment-naïve and 81 background-therapy patients) with PAH were enrolled at 8 centres. We performed retrospective survival analyses and studied the association between upfront combination therapy and haemodynamic improvement, adjusting for baseline NYHA functional class. Among 189 patients, 1-, 2- and 3 year survival rates were 97.0% (95% CI: 92.1 to 98.4), 92.6% (87.0–95.9), and 88.2% (81.3–92.7), respectively. In the treatment-naïve group, 33% of patients received upfront combination therapy. In this cohort, 1-, 2- and 3 year survival rates were 97.6% (90.6–99.4), 97.6% (90.6–99.4) and 95.7% (86.9–98.6), respectively. Patients on upfront combination therapy were 5.2-fold more likely to show haemodynamic improvement at first follow-up compared with monotherapy. According to JAPHR data, initial upfront combination therapy was associated with improvement in haemodynamic status.

Also, we performed a prospective study on tolvaptan, a vasopressin receptor antagonist, for right HF associated with PH. Tolvaptan reduced the furosemide dose requirement over a 12 week period in patients with chronic right HF associated with PH in the absence of any serious adverse events. In addition, tolvaptan significantly improved brain natriuretic peptide levels and fluid retention, and was associated with reduced urine osmolality. These findings suggest that tolvaptan can improve right HF.

**HEART FAILURE IN CANCER PATIENTS: MANAGEMENT THROUGH ONCO-CARDIOLOGY**

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Heart failure (HF) is one of the most dreaded complications of cancer therapy that can significantly impact morbidity and mortality. With new treatment modalities in oncology with potential cardiotoxicity and a high prevalence of cardiovascular disease in cancer patients, the risk of developing HF is significantly increased. HF can occur acutely during chemotherapy administration, or it can manifest years after the completion of cancer treatment. Cancer survivors may develop chemotherapy-induced HF several years after completing anthracycline-based treatment. Timely diagnosis, intervention and surveillance of cancer patients while receiving treatment and after survivorship are critical in the prevention and management of left ventricular dysfunction that can lead to HF. Cancer patients with concurrent HF experience complex clinical management issues that require a multidisciplinary approach and a close collaboration among oncologists, cardiologists, and the health care team. A new discipline of Onco-Cardiology has evolved to address the cardiovascular needs of patients with cancer. The collaboration between oncologists and cardiologists can optimise patients’ chances of receiving successful cancer therapy while avoiding the morbidity and mortality associated with HF.