

Advances in the Management of Valvular Heart Disease

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In recent decades, there has been considerable progress in the diagnosis and management of valvular heart disease. Use of echocardiography has been a major advance in understanding the pathophysiological aspects of common valvular diseases. In this issue of the Journal, Lacerda and Orton described a model to investigate the effects of chronic tensile stress on the mitral valve with inferences to those with myxomatous degeneration. Here, the important points are that chronic tensile loading puts undo mechanical forces on vulnerable parts of the valve and clearly contributes to progressive degenerative changes resulting in regurgitation. This model also adds on the evidences of robust relationship between mechanical load, pathologic mechanosensing pathway and structural change occurring at cellular level of valve [1-4]. Promising intervention to stop such vicious cycle at particular point is expectable to prevent or slow progression of disease.

The paper by Kassem and Jamil reported on a simple novel technique to prevent the creation of systolic anterior motion of the mitral valve after open mitral valve repair with common approaches including triangular resection of P2 and non-resection strategies to repair posterior leaflet. In the case of having redundant anterior leaflet tissue or very narrow mitral-aortic angle which could have been worsened by ring annuloplasty, this novel suture technique appears to prevent or correct motion of the anterior leaflet tips into the aortic outflow tract without any evidence of mitral stenosis and thus reducing the risk for a post-operative outflow tract gradient to form. Advantages over other previous proposed techniques [5-8] are worthwhile to be proved in the future.

In the next article, we turn our attention to the aortic valve. Dr. Said presents a comprehensive review of the rapidly developing field of non-surgical aortic valve replacement using percutaneous transcatheter aortic valve intervention (TAVI). This procedure renews interest for patients with severe calcific aortic stenosis while they await being involved in one of the TAVI clinical trials or registry programs [9]. It is clear that this form of intervention is as safe as surgery and may result in less perioperative morbidity and mortality [10] which is the main concern in inoperable high-risk patients. Transvascular approach of this procedure promisingly improves one-year survival rate from 60% unoperated patients to 79.2% [11] with not infrequent complications of perioperative stroke [12,13] and acute kidney injury [14].

Under epidemic concern among US veterans of Vitamin D deficiency which linked to many cardiovascular abnormalities, Joshi et al. retrospectively reviewed the data for this condition, largely represented by low levels of 25-hydroxy vitamin D, and the significantly associated echocardiographic findings of pulmonary hypertension and valvular problems (mitral regurgitation & aortic sclerosis). This is consistent with previous evidences [15]. In recent years, the literature has exploded with interest surrounding vitamin D and its potential effects on the cardiovascular system [16]. To date, however, the only prospective randomized trial of a vitamin D analogue (paricalcitol) versus placebo in patients with chronic kidney disease did not show a differential effect on regression of left ventricular hypertrophy [17]. We will await the results of larger cardiovascular outcomes trials with vitamin D to see if there is a signal for cardiovascular benefit

or harm. Such results would bring about the consensus for clinicians to appropriately monitor or treat vitamin D deficiency especially in patient with particular conditions i.e. valvular heart disease, pulmonary hypertension, etc.

We finish this special issue with congenital heart disease, tetralogy of Fallot, as a substrate for difficult arrhythmia problems when patients grow up after successful surgery summarized by Zubairi et al. These are largely a family of complex paroxysmal atrial tachycardias which are difficult to treat due to macro reentry around lines of atrial scar tissue resulting from atrial approach [18]. Also, ventricular tachycardia originated from scar after right ventriculotomy is associated with sudden cardiac death [19,20]. This paper makes the clear case for monitoring patients and long term multidisciplinary collaborating with electrophysiologist for such arrhythmias after surgical repair of tetralogy of Fallot.

In summary, this issue contains spotlight articles nicely discussing a wide range of structural heart disease and presents both surgical and non-surgical advances in the field. With the aging of the population in developed countries, valvular heart disease is expected to rise in incidence and prevalence; thus, continuing research in this area is warranted.

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