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A Note on valvular heart disease and electrophysiology

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Introduction

Valvular heart disease (VHD) is frequent is industrialized countries and its prevalence increases with age due to the predominance of degenerative aetiology. Clinical approach is paramount for evaluation of the patient's history, symptoms and for the detection of VHD by auscultation. Echocardiography plays a major role in diagnosis and assessment of severity and prognosis. Other investigations are mainly non-invasive and include stress testing, multimodality imaging and biomarkers. Risk stratification is essential to weigh the risk of intervention against the expected natural history of VHD. It should include risk scores, keeping in mind their limitations, in particular in the elderly. Heart valve centres are required to deliver high-quality care and provide adequate training. Non-vitamin K antagonist oral anticoagulants may be used in patients with atrial fibrillation and aortic stenosis, aortic regurgitation, mitral regurgitation, or aortic bioprostheses beyond 3 months after implantation, but are contraindicated in mitral stenosis and mechanical valves.

Valvular heart disease (VHD) accounts for a significant burden in the community and predominates in elderly patients, thereby raising particular problems for the evaluation of the risk:benefit ratio of interventions. Interventions for VHDare the only effective therapy for improving survival.Valvular interventions have been reoriented with the development of less invasive approaches, in particular transcatheter interventions.The aims ofthe evaluation of patients withVHD are to diagnose, quantify, andassess the mechanism ofVHDas well as its consequences. The consistency between the results of diagnostic investigations and clinical findings should be checked at each step in the decision-making process. The aim of obtaining a case history is to assess symptoms and to evaluate for associated co-morbidity. The patient is questioned on his/her lifestyle to detect progressive changes in daily activity in order to limit the subjectivity of symptom analysis, particularly inthe elderly. Patients who currently deny symptoms, but have been treated for HF, shouldbe classifiedas symptomaticafter exclusionofother potential causes of HF unrelated to valve disease.

The reason for functional limitation and its degree, together withits relationtothe underlying valvularproblem, should be documented in the records. In the presence of cardiac and extracardiac comorbidities it is important to elucidate the true cause of the symptoms. Indices of left ventricular (LV) enlargement and function are strong prognostic factors and play an important role in decision-making for interventions in regurgitant VHD. While diameters allow a less complete assessment of LV size than volumes, their prognostic value has been studied more extensively. LV dimensions should be indexed to body surface area. Transoesophageal echocardiography (TOE) should be considered when transthoracic echocardiography (TTE) is of suboptimal quality or when thrombosis, prosthetic dysfunction, or endocarditis is suspected. Intraprocedural TOE is used to monitor the results of surgical valve repair or percutaneous procedures. Highquality intraoperative TOE is mandatory for all valve operations to document normal function of the implanted prosthesis, document the absence of paravalvular leaks, and assess the result of a repair procedure.

In patients with inadequate echocardiographic quality or discrepant results, cardiovascular magnetic resonance (CMR) should be used to assess the severity of valvular lesions, particularly regurgitant lesions, and to assess ventricular volumes, systolic function, abnormalities of the ascending aorta, and myocardial fibrosis, as CMR assesses these parameters with higher reproducibility than echocardiography. Rheumatic valve disease used to be the most prevalent etiology of valvular cardiac diseases worldwide. Still, in developing countries, rheumatic heart disease remains the most common cause of valvular heart disease. Over the past 60 years, the etiology of most valvular heart diseases in industrialized countries shifted towards degenerative etiologies, mainly because of a decrease in acute rheumatic fever. However cardiac valve diseases remain common in industrialized countries, mainly because the decrease in rheumatic valve disease is compensated by an increase in degenerative valve disease, with an important contributing fact being the aging population of industrialized countries.

The shift in pathologic etiology accounts for differences in patient characteristics and distribution of type of valvular lesions. In the US population, the national prevalence of moderate and severe valve disease determined by echocardiography was estimated at 2,5%. In another cohort, prevalence based on clinical signs and symptoms, confirmed by echocardiographic imaging, the estimated prevalence of at least moderate valvular diseas was estimated at 1,8%. This difference indicates the under diagnosing of valvular heart disease, and illustrates the fact that diagnosis on the basis of clinical information alone is not reliable.