



Role of Mitral Valve Disease Associated with Pulmonary Hypertension

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DESCRIPTION

According to morphological and pathophysiological problems, mitral valve disease can be divided into two categories: Mitral Stenosis (MS) and Mitral Regurgitation (MR). According to reports, 23%–33% of people with mitral valve dysfunction experience Pulmonary Hypertension (PH), which is a frequent side effect. Patients with mitral valve disease who have chronic pressure and volume overload in the Left Atrium (LA) experience an increase in LA pressure, LA enlargement, and passive backward pressure transmission to the pulmonary vascular bed, which results in pulmonary vasoconstriction and PH. In individuals with MS and MR, LA remodeling, atrial fibrillation, and PH all have similar long-term pathophysiological effects and have prognostic value. In individuals with mitral valve disease, the presence of PH—defined as pulmonary artery systolic pressure >50 mm Hg at rest—is an important indicator of the necessity for valvular intervention. The risk variables for PH (such as age, LA enlargement, and MR severity) in individuals with isolated organic MR have been confirmed in a number of earlier investigations. However, MS patients continue to fail to notice this problem. The purpose of the current study was to identify the risk factors for PH in mitral valve disease patients and more especially in the subgroups of patients with MS and MR.

Patients with mitral valve disease frequently experience PH. While an incidence of 23%–33% was observed in earlier investigations, the current study showed that 37.4% of patients with moderate to severe mitral valve dysfunction had PH. In individuals with mitral valve disease as well as in the subgroups of MS and MR, LA volume index and a severe clinical illness are both independent factors of PH. The current study further highlighted the significance of severe right-sided valvular regurgitation as a standalone predictor of PH in patients with mitral valve disease and the subgroup of MR. Even after effective corrective procedures, the presence of PH in individuals with mitral valve disease negatively affects the clinical symptoms and is a predictor of poor long-term outcomes, including event-free

survival. Right heart failure and/or pulmonary edema are risks for patients with PH and mitral valve disease, and these conditions significantly increase morbidity and mortality. According to the most recent recommendations for treating valvular heart disease, patients with mitral valve disease and pulmonary artery systolic pressure greater than 50 mm Hg should undergo valve intervention even if they are asymptomatic.

In chronic mitral valve disease, the initial insult that causes PH is different in MR compared to MS. While MR causes volume overload due to substantial regurgitation, MS causes LA pressure overload brought on by the stenotic mitral valve. Despite these various pathophysiological mechanisms, the common physiologic and anatomical alterations include elevated LA pressure, LA enlargement, and passive backward pressure transmission to the pulmonary vessels, pulmonary vasoconstriction, irreversible vascular remodeling of the pulmonary arterial wall, elevated pulmonary vascular resistance, and eventually PH. In the current study, PH was independently predicted by dyspnea, LA volume index, considerable right-sided heart valve regurgitation, severe disease, and stenotic lesion in patients with mitral valve disease. These findings highlight the significance of the pathophysiological changes associated with mitral valve disease, including the severity of the clinical illness, LA remodeling, and stenotic lesions that result in PH. In individuals with mitral valve dysfunction, a connection between the New York Heart Association functional class and PH has previously been documented. The anticipated LA dilatation and pulmonary pressure increase with the severity of the mitral valve disease. The current investigation shown that, regardless of clinical symptoms, cardiac rhythm, or the severity of mitral valve disease, MS was a more significant predictor of PH than MR. With a prevalence of 37.4% in the current study, PH is a frequent clinical and pathophysiological consequence of mitral valve disease. Both in MS and MR patients, echocardiography can be a useful tool for evaluating LA function and the risk of PH.

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