

### **Echocardiographic Spectrum of Potential Cardiac Causes of Severe Pulmonary Hypertension**

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**Background:** Estimation of pulmonary artery systolic pressure (PAP) and assessment of possible cardiac causes of pulmonary hypertension (PH) are feasible by echocardiography. The objective of our study was to determine the frequency and distribution of potential cardiac causes of severe PH in a large group of patients examined by echocardiography.

**Methods:** The echocardiographic laboratory computerized database was used to identify consecutive patients with severe PH, defined as a PAP  $\geq 60$  mmHg (determined by echocardiography). The echocardiographic reports of these patients were reviewed and they were grouped according to potential cardiac etiologies of PH: 1) moderate or severe left ventricular systolic dysfunction (LVSD) (left ventricular ejection fraction  $<40\%$ ); 2) moderate or severe left ventricular diastolic dysfunction (LVDD) (pseudo-normal or restrictive left ventricular filling pattern); 3) any type of myocardial dysfunction (LVSD and/or LVDD), 4) significant valve disease (moderate or severe mitral stenosis, severe aortic stenosis, severe mitral or aortic regurgitation, and normal or abnormal mitral or aortic prostheses); or 5) combined myocardial and valve disease.

**Results:** Of 12,302 examinations performed during an 18 months period, 536 patients had severe PH in a total of 625 examinations (5.1% of all examinations; PAP =  $70 \pm 10$  mmHg, range: 60-115 mmHg). LVSD, LVDD, myocardial dysfunction (LVSD or LVDD), valve disease (defined above), and combined myocardial and valve disease were evident in 165 (30.8%), 175 (32.6%), 262 (48.8%), 189 (35.3%), and 127 patients (23.7%), respectively. There was no obvious cardiac diagnosis in 175 patients with severe PH (32.6%).

**Conclusions:** Severe PH is a common finding in a high volume echocardiographic laboratory. Advanced myocardial dysfunction and/or valve disease are the potential cause of severe PH in  $\sim 2/3$  of patients, whereas there is no obvious cardiac cause of PH in  $\sim$  a third of patients.