Outcomes of Atrial Septal Defect (ASD) Closure in Middle-aged and Elderly Patients with Pulmonary Hypertension

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Background: Atrial septal defect (ASD) is the second most common congenital heart defect in adults. Patients are often asymptomatic and the diagnosis is often ignored until adulthood. Pulmonary hypertension (PHT) is the most important problem in untreated patients. Recent ESC guideline on PHT treatment has recommended ASD closure in patients with normal PVR (< 2.3 WU), but the roles of ASD closure in patients with PHT are still controversy.

Objective: To evaluate the clinical and hemodynamic outcomes after ASD closure in patients with PHT.

Methods: Patients aged > 40 years who underwent either transcutaneous or surgical ASD closure at Ramathibodi Hospital or Sunprasitthiprasong Hospital between December 2006 and October 2015 were included. Clinical characteristics and hemodynamic data: echocardiography and right heart catheterization (RHC) in each patient were reviewed from medical records. PHT was defined as either TRPG > 40 mmHg from transthoracic echocardiography or mPAP > 25 mmHg from RHC. During follow-up, clinical and hemodynamic outcomes including functional class (FC) and pulmonary pressure measured by echocardiography were assessed. χ 2 for statistical significance was used for categorical variables; whereas, t-tests were applied for continuous variable. Statistical significance was considered as p-value < 0.05.

Results: A total of 133 patients were included (mean age 50 + 10 years, 78.2% female). 48 patients (36.1%) were diagnosed ASD with PHT at baseline. Patients with PHT were significantly older than patients without PHT (54 + 8 years vs 49 + 11 years, p = 0.002). Prior to closure, 25% of patients with PHT were in functional class I compared with 62.2% of those without PHT (p = 0.001). Of 133 patients, 80 patients had complete follow-up data (34 in PHT group and 56 in non-PHT group). Mean follow-up was 1,053+ 968 days. After ASD closure, 72.7% of patients with PHT at baseline were in FC I and 26 (76.5%) showed normal pulmonary pressure during follow-up. Compared with patients whose pulmonary pressure returned to normal after procedure, those who remained in PHT after ASD closure were younger (49 + 9 years vs 57 + 7 years, p = 0.03), but higher TRPG prior to closure (66.0 + 12.6 mmHg vs 52.7 + 15.6 mmHg, p = 0.04).

Conclusion: ASD closure in middle-aged and elderly patients with PHT yielded good outcomes with 72.7% of the patients in FC I after closure. However, 23.5% of them still present with PHT even after ASD closure.

Keywords: Atrial septal defect, Pulmonary hypertension, Functional class