Surgical Treatment of the Atrial Septal Aneurysms with Concomitant Cardiovascular Abnormalities

Kardiyovasküler Anormallikler ile Beraber Görülen Atriyal Septal Anevrizmaların Cerrahi Tedavisi

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Atrial septal aneurysms are the protrusions of the interatrial septum into the left or right atrium. Their detection rate by conventional transthoracic echocardiography is 0.12-0.52% while prevalence by transesophageal approach is 3-8% (1). Correlation between atrial septal aneurysm and ischemic strokes without any identifiable cause or cardiac embolism was established in many studies (2-4). We reviewed the surgical treatment of the atrial septal aneurysms with concomitant cardiovascular abnormalities in three patients operated in our clinic between January 2002 and December 2003. The patients data are summarized in the Table 1.

Atrial septal aneurysm is usually associated with other anomalies rather than being alone (1). Hanley (3) classified atrial septal aneurysm in type I; aneurysm is limited to the base of fossa ovalis (fossa ovalis aneurysm), while in type II, aneurysm extends to the whole interatrial septum. Type I aneurysms are subdivided into groups A and B. Oscillatory movement is less than 5 mm for group A and more than 5 mm for group B. The risk of cardiac embolization does not differ between the two groups (3). Cardiac abnormalities that are associated with atrial septal aneurysm are pulmonary embolism, atrial tachyarrhythmias, atrioventricular valve prolapse and atrial septal defect (2). The transesophageal approach allows almost ideal imaging of interatrial septum. Diagnosis establishment can be easier in patients with other associated anomalies.

Atrial septal aneurysm is one of the causes of source for cerebrovascular and peripheal vascular embolism. Hanley (3) reported clinical results of cardiac embolism in 16 (20%) of 80 consecutive patients with an atrial septal aneurysm. In 4% of these patients, atrial septal aneurysm was the only pathology (3). If the aneurysm is the only pathology and there is no thrombus inside, the patient can be treated medically with anticoagulation (5). Presence of atrial septal aneurysm and patent foramen ovale may cause right to left shunt and paradoxical embolism in cases of severe hypotension caused by other reasons. Midodrine and alpha-1 agonists, which increase systemic arterial pressure, were reported to be useful in these patients (6). Risk of recurrent cerebrovascular events is high particularly in patients with atrial septal aneurysms concomitant with atrial septal defect inspite of antiplatelet therapy. If there is a coincident pathology that

Table 1. Summary of patients data

Case	1	2	3
Age, years	39	30	63
Sex	Female	Female	Male
Complaints	Dyspnea	Dyspnea	Chest pain, dyspnea
Functional Capacity	NYHA Class III	NYHA Class III	NYHA Class III
ECG	Sinus rhythm	Atrial fibrillation	Sinus rhythm, anterior T-wave inversion
Echocardiography	Mitral stenosis, ASA (2.4cmx1.4cm)	Mixed mitral disease, ASA (1.5 cm diameter)	Secundum ASD, ASA (1.5 cm diameter)
Angiography	-	-	Three-vessel coronary artery disease
Operative Findings	ASA on fossa ovalis, polypoid, penetrating deep into left atrium	ASA on fossa ovalis	Secundum ASD, ASA on fossa ovalis
Operation	MVR, ASA resection, primary repair of interatrial septum	MVR, ASA plication	Primary closure of secundum ASD with ASA plication, CABG

ASA: Atrial Septal Aneurysm; ASD: Atrial Septal Defect; CABG: Coronary Artery Bypass Grafting; ECG: Electrocardiography, MVR: Mitral Valve Replacement; NYHA: New York Heart Association

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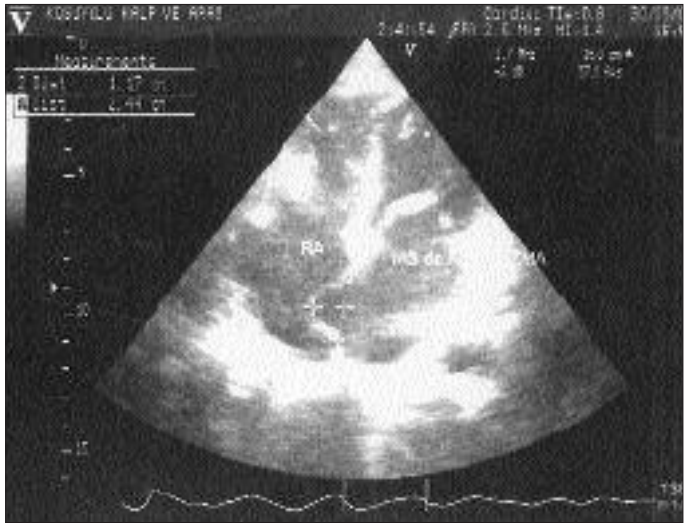

Figure 1. Four-chamber transthoracic echocardiographic view of atrial septal aneurysm in a patient with mitral valve stenosis

Figure 2. Postoperative echocardiographic view in the same patient after mitral valve replacement and resection of atrial septal aneurysm with primary repair of the interatrial septum.

should be treated surgically, the aneurysm can be repaired at the same time. Our patients had no clinical findings related to atrial septal aneurysm. During diagnostic workup for other pathologies, atrial septal aneurysm was detected incidentally and surgical correction was planned. If no intervention was performed, these patients would have ongoing risk of systemic embolisation in spite of warfarin and aspirin treatment. In these patients, who were already undergoing cardiopulmonary bypass, resection of aneurysm through a small atriotomy and repair of patent foramen ovale eliminated this risk. Surgical treatment is an alternative for low risk patients with coincident anomalies. But none of the absolute criteria are present for the type of the procedure. In our clinic, we have resected the aneurysm with a wide base, and repaired the iatrogenic atrial septal defect primarily. If the base of the aneurysm is not wide, plication can be applied as an alternative.

References

1. Weyman AE. Principle and Practice of Echocardiography. Philadelphia: Lea & Febiger; 1994. p. 931-2.
2. Mügge A, Daniel WG, Angerman C, et al. Atrial septal aneurysm in adult patients. A multicenter study using transthoracic and transesophageal echocardiography. Circulation 1995;91:2785-91.
3. Hanley PC, Tajik AJ, Haynes JK, et al. Diagnosis and classification of atrial septal aneurysms by two dimensional echocardiography: report of 80 consecutive cases. J Am Coll Cardiol 1985;6:1370-82.
4. Aksnes J, Lindberg HL, Ihlen H. Surgical elimination of atrial septal aneurysm causing cerebral embolism. Ann Thorac Surg 1996;62:1190-2.
5. Shinohara T, Kimura T, Yoshizu H, Ohsuzu F. Three-year follow-up of an atrial septal aneurysm. Ann Thorac Surg 2001;71:672-3.
6. Chidambaram M, Mink S, Sharma S. Atrial septal aneurysm with right-to-left interatrial shunting. Texas Heart Institute J. 2003;30:68-70.