Left atrial appendage aneurysm causes severe mitral regurgitation and heart failure: Report of a successfully treated case

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Left atrial appendage aneurysm (LAAA) is a rare cardiac anomaly. Its cause is believed to be a congenital dysplasia of the left atrial muscle. LAAA is different from acquired enlargement of the left atrium secondary to other cardiac diseases.¹ In the second to third decades of life, some patients with LAAA experience palpitation, atrial tachyarrhythmia, progressive dyspnea, or atypical chest pain.² LAAA usually appears as an isolated anomaly, and resultant mitral regurgitation (MR) has not been reported in the literature.

CLINICAL SUMMARY

Atrial fibrillation and congestive heart failure developed in a 28-year-old woman. Five years previously, she underwent transthoracic echocardiography because of a long history of cardiomegaly on chest x-ray, and a 40 × 50-mm LAAA and mild MR were diagnosed. She was in sinus rhythm and free from cardiac symptoms.

For 5 months, she had palpitation and dyspnea on exercise. Repeat echocardiography disclosed a larger LAAA, up to 58 × 92 mm, and deformity of the mitral annulus caused severe MR (Figure 1, A, B). A moderate volume of pericardial effusion was also detected. Three-dimensional reconstruction of a computed tomography scan clearly showed the whole shape of the LAAA and its relation to surrounding structures (Figure 2, A, B). B-type natriuretic peptide level was 567.3 pg/mL.

At surgery, the pericardium was intact and adhesion was absent. Under cardiopulmonary bypass and cardioplegic arrest, the LAAA was observed through a left atriotomy. The wall of the LAAA was thin, but trabecular architecture was preserved. The mitral leaflets and subvalvular apparatus appeared to be intact, and mitral

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FIGURE 1. A, B, Preoperative. C, D, Postoperative. Annuloplasty ring (arrow). A, LAAA deformed the mitral annulus. The mitral valve leaflets were not competent. B, Severe MR. C, The annuloplasty ring in place and the reconstructed left atrium. D, Resolution of MR.

FIGURE 2. A, Huge LAAA. B, No anomaly of the 4 pulmonary veins. C, Postoperative computed tomography scan shows that LAAA was resected, and an annuloplasty ring was placed in the mitral annulus.

annuloplasty was successfully performed with 26-mm Physio Annuloplasty ring (Edwards Lifesciences Corp, Irvine, Calif). The LAAA was resected and closed internally and externally. Left atrial ablation (left-sided Maze) using radiofrequency (Cardioblate BP₂ Irrigated RF; Medtronic Inc, Minneapolis, Minn) was also performed. The patient was discharged on postoperative day 22 in good condition.

Postoperative echocardiography (Figure 1, C, D) and 3-dimensional computed tomography (Figure 2, C) scan showed no residual lesion. At 5-months follow-up, the patient is doing well and remains in regular sinus rhythm with no antiarrhythmic drug therapy.

DISCUSSION

By performing an online search of PubMed, we identified 85 cases of LAAA reported in the literature between 1922 and 2010.^{1,2} In the majority of cases, LAAA was an isolated lesion. Patients were free from severe clinical symptom and successfully treated by LAAA resection alone.¹

Some patients with LAAA also underwent a Cox-Maze III procedure for atrial fibrillation.² It has been reported that LAAA resection alone effectively eliminated the substrate for ectopic foci,² and patients were kept free from atrial fibrillation. However, the LAAA in this case was huge; a simple resection of the LAAA in this case might leave dysmorphic tissue to propagate atrial fibrillation. Therefore, a left-sided Maze procedure was concomitantly performed because of its known efficacy and safety in patients undergoing mitral valve surgery.³ LAAA is not always clinically silent.

CONCLUSIONS

This is the first case report of LAAA causing significant MR and heart failure by deforming the mitral valve annulus. The cause of MR was simply annular deformity, and annuloplasty was successful.

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