A 51-year-old man was referred to cardiology for evaluation of a dilatation of the right atrium (RA), which was found incidentally on chest computed tomography (CT) during postoperative follow-up for colon cancer. He had no cardiac symptoms and physical examination was normal. Routine laboratory tests including cardiac troponin and N-terminal pro-B-type natriuretic peptide were also normal. Chest radiography showed a triangular shaped cardiomegaly with a bulging right cardiac border (Figure 1A). Transthoracic echocardiography indicated a large aneurysmal structure in the right atrium. Chest radiography showed a triangular shaped cardiomegaly with a bulging right cardiac border (Figure 1A). Transthoracic echocardiography indicated a large aneurysmal structure in the right atrium.
continuity with the free wall of the RA (Figure 1B). Both ventricles were of normal size and function, and the tricuspid valve was normally located. For better understanding of the anatomy, he was advised to undergo multi-slice cardiac CT. Cardiac CT showed a giant aneurysmal structure arising from the RA and appendage (Figure 1D), filled with contrast from the superior vena cava (Figure 1D). Three-dimensional volume rendering clearly showed the anatomical relationships between the cardiac chambers (Figure 1E, anterior view; Figure 1F, posterior view). The estimated volume of the RA was 133 cm³ on CT. To further characterize the functional aspect of the RA aneurysm, cardiac magnetic resonance imaging (MRI) was done. This showed a swirling flow on the lateral side of the RA aneurysm, consistent with a turbulent current (Figure 2A). T1-weighted imaging demonstrated late gadolinium enhancement (LGE) along the wall of the RA aneurysm (Figure 2B). No significant arrhythmia was seen on 24-h Holter monitoring. The patient was given oral anticoagulant to prevent any thrombus formation, and has been followed up for 1 year without any events.

RA aneurysm is a rare cardiac anomaly. RA aneurysm is generally considered to be congenital and believed to be caused by dysplasia of the muscular wall of the RA. Fibrosis of the atrial endo/myocardium is a common histological finding of RA aneurysm. In this patient, there was LGE of the RA aneurysm wall, which meant that there was fibrosis of the atrial myocardium. Structural, contractile, or electrical atrial alterations are associated with the onset and perpetuation of atrial fibrillation (AF), and fibrosis is the hallmark of atrial structural remodeling. MRI with LGE allows for the detection and quantification of fibrotic tissue via the slow washout kinetics of the gadolinium in diseased tissue.

RA aneurysm can be asymptomatic or it can present with a variety of symptoms including thromboembolic and arrhythmic complications. The common arrhythmias are supraventricular arrhythmias such as AF. While symptomatic patients and those with an enlarging aneurysm should undergo surgical resection, a conservative approach has been recommended for asymptomatic patients. Asymptomatic patients managed conservatively should receive anticoagulation for the prevention of thrombus formation. Because the present patient was asymptomatic but had a large aneurysm with a whirling blood flow and LGE of the atrial myocardium, treatment consisted of anticoagulation and conservative management with annual imaging surveillance.

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References