

## Refractory anemia and myxoma after radiofrequency ablation: a case report

Doğan Kahraman<sup>1</sup>, Çağın Zaim<sup>2</sup>, Levent Yazıcıoğlu<sup>3</sup>, Sadık Eryılmaz<sup>3</sup>, Zeynep Baştüzel Eyileten<sup>3</sup>

Received: October 21, 2015 Accepted: November 17, 2015 Published online: March 03, 2016

### ABSTRACT

Recently, atrial fibrillation has been widely treated by percutaneous radiofrequency ablation. Local alteration in milieu due to myocardial inflammation after the procedure may cause well-known complications, such as perforation and thromboembolism. Herein, we present a case of myxoma with a sudden onset of symptoms with refractory anemia diagnosed one year after radiofrequency ablation procedure.

**Keywords:** Anemia; inflammation; myxoma; radiofrequency catheter ablation.

Percutaneous radiofrequency ablation (RFA) is preferred treatment for drug-resistant, permanent or paroxysmal atrial fibrillation (AF).<sup>[1]</sup> Related complications, mainly thromboembolism, are seen about 1 to 5% of cases.<sup>[2]</sup> Myxomas are the most common primary neoplasms of the heart and they typically occur in the left atrium (LA) with attachment to the interatrial septum.<sup>[3]</sup> Dyspnea, thromboembolism, and constitutional symptoms are the classical triad of myxomas.<sup>[3]</sup> In the literature, such cases are rarely reported to occur after cardiac injuries.<sup>[4]</sup> Herein, we present a case of atypical left atrial myxoma with a sudden onset of symptoms with refractory anemia diagnosed one year after RFA procedure.

### CASE REPORT

A 55-year-old female patient followed for chronic refractory anemia for the past eight months was consulted by a hematologist for the giant left atrial mass which was detected by computed tomographic pulmonary angiography with suspected pulmonary thromboembolism (Figure 1). Her medical history revealed percutaneous RFA after several attacks of AF. Preoperative echocardiographic findings were normal. She was lost in the follow-up period after palpitation-free three months. Four months after the procedure, she was diagnosed with refractory anemia as confirmed by the further tests including proinflammatory cytokines and bone marrow aspiration. Plasma interleukin-6 (IL-6) increased from 46 pg/mL to 210 pg/mL within eight months. A written informed consent was obtained from the patient.

The transthoracic echocardiography showed a giant myxoma filling the LA which was protruding through the mitral valve into the left ventricle during diastole (Figure 2). The rhythm was new-onset AF and hemoglobin level was 7.4 mg/dL preoperatively. She was operated within two days of admission. After transseptal exploration of LA, we excised the myxoma with its pedicle attached to the superior margin of the left superior pulmonary vein. She was discharged on the sixth postoperative day with an uneventful recovery. Her hemoglobin level was 11.8 mg/dL and IL-6 level was within normal range at three months.

### DISCUSSION

Percutaneous RFA has been widely used as the first-line therapy for symptomatic patients with AF.<sup>[1]</sup> Serious complications, including thromboembolic events, are likely to be seen in 1 to 5% of RFA cases.<sup>[2]</sup> Left atrial masses after the procedure should be considered in the differential diagnosis of thrombi, infective endocarditis, and myxomas.<sup>[4]</sup> Prothrombotic markers with other inflammatory mediators typically increase within first week and most thromboembolic events occur within two weeks after RFA.<sup>[5]</sup> Therefore,

<sup>1</sup>Department of Cardiovascular Surgery, Medical Park Ankara Hospital, Ankara, Turkey

<sup>2</sup>Department of Cardiovascular Surgery, Burhan Nalbantoğlu Hospital, Lefkosa, Cyprus, Republic of Turkish

<sup>3</sup>Department of Cardiovascular Surgery, Medical Faculty of Ankara University, Ankara, Turkey

**Corresponding author:** Doğan Kahraman, MD. Medical Park Ankara Hastanesi Kalp ve Damar Cerrahisi Bölümü, 06370 Batıkent, Yenimahalle, Ankara, Turkey. Tel: +90 312 - 666 80 40 e-mail: drdogankahraman@gmail.com

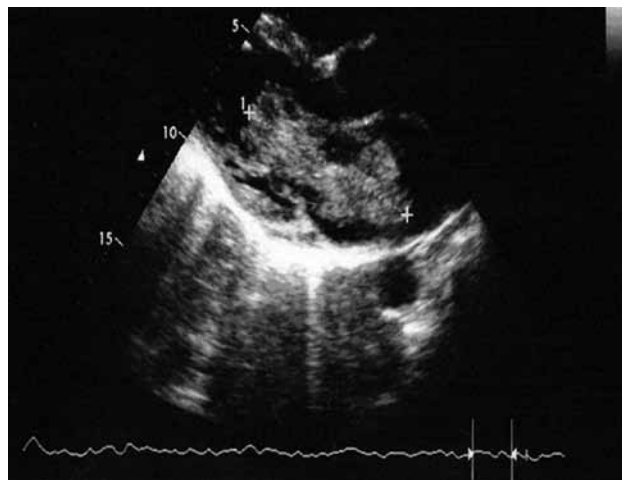


**Figure 1.** Computed tomographic image of the left atrial mass filling the left atrium.

procedure-related late thrombus formation in cardiac chambers is not expected, unless AF recurs.

In addition, RFA produces myocardial necrosis to prevent signal transmission through the accessory pathways and, precisely, pulmonary vein isolation is the main target.<sup>[1]</sup> Some inflammatory cytokines have been studied to determine RFA-induced myocardial injuries and baseline procedural high-sensitivity CRP values are proposed to be independently predictive of AF recurrences.<sup>[5]</sup> Myxomas have been also reported to be seen after instances causing endocardial injuries, including percutaneous mitral balloon valvuloplasty and repair of atrial septal defects.<sup>[3]</sup> However, based on a very few number of cases in the literature, it is difficult to establish a conclusion that whether myxomas are related to inflammatory responses to RFA or are coincidences. To the best of our knowledge, the appearance of an atrial myxoma after RFA has been reported only twice.<sup>[4,6]</sup> In our case, its atypical site of attachment close to the left superior pulmonary vein and rapid growing process make us more suspicious on its coincident nature with RFA-related myocardial changes.

Furthermore, dyspnea is thought to occur when the tumor mass intermittently obstructs the flow across the atrioventricular valves and its severity correlates the size of the myxoma.<sup>[7]</sup> Although possible effect of the tumor size on hemolysis seems to be reasonable, the evidences related to mechanical red blood cell injuries are still unclear. In a study, Kanda et al.<sup>[8]</sup> reported an increased expression of IL-6 in 12 of 15



**Figure 2.** Echocardiographic view of a myxoma protruding into the left ventricle.

myxomas (80%). Moreover, increased IL-6 in a wide range of patients was found to be inversely related to the hematopoietic activity.<sup>[9]</sup> As a result, the authors concluded that; IL-6 level plays a major role for the development of anemia'. Interleukin-6 measurement for the diagnosis of myxomas would provide us improved interpretation on the inverse relationship between increased expression of IL-6 and anemia.

In conclusion, although further cases are required to elucidate the relationship between myxoma development and local inflammation of endocardium after radiofrequency ablation, it should be kept in mind that myxomas may cause anemia via interleukin 6 production.

#### Declaration of conflicting interests

The authors declared no conflicts of interest with respect to the authorship and/or publication of this article.

#### Funding

The authors received no financial support for the research and/or authorship of this article.

#### REFERENCES

1. Bunch TJ, Cutler MJ. Is the pulmonary vein isolation still the cornerstone in the atrial fibrillation? *J Thorac Dis* 2015;7:132-41.
2. Gurbuz O, Ercan A, Ozkan H, Kumtepe G, Karal IH, Ener S. Case report: paravalvular leak as a complication of percutaneous catheter ablation for atrial fibrillation. *J Cardiothorac Surg* 2014;9:187.

3. Reardon MJ, Smythe WR. Cardiac neoplasms. In: Cohn LH, Edmunds LH Jr, editors. *Cardiac surgery in the adult*. 2nd ed. New York: McGraw-Hill; 2003. p. 1373-400.
4. Ancona R, Comenale Pinto S, Caso P, Di Palma V, Pisacane F, Martiniello AR, et al. Right atrial mass following transcatheter radiofrequency ablation for recurrent atrial fibrillation: thrombus, endocarditis or mixoma? *Monaldi Arch Chest Dis* 2009;72:40-2.
5. Lim HS, Schultz C, Dang J, Alasady M, Lau DH, Brooks AG, et al. Time course of inflammation, myocardial injury, and prothrombotic response after radiofrequency catheter ablation for atrial fibrillation. *Circ Arrhythm Electrophysiol* 2014;7:83-9.
6. Rubio Alvarez J, Martinez de Alegria A, Sierra Quiroga J, Adrio Nazar B, Rubio Taboada C, Martinez Comendador JM. Rapid growth of left atrial myxoma after radiofrequency ablation. *Tex Heart Inst J* 2013;40:459-61.
7. Strecker T, Agaimy A. Giant left atrial myxoma causing drop attack by prolapsing into mitral valve. *Int J Clin Exp Pathol* 2012;5:996-9.
8. Kanda T, Umeyama S, Sasaki A, Nakazato Y, Morishita Y, Imai S, et al. Interleukin-6 and cardiac myxoma. *Am J Cardiol* 1994;74:965-7.
9. Tisi MC, Bozzoli V, Giachelia M, Massini G, Ricerca BM, Maiolo E, et al. Anemia in diffuse large B-cell non-Hodgkin lymphoma: the role of interleukin-6, hepcidin and erythropoietin. *Leuk Lymphoma* 2014;55:270-5.