

Sinus of Valsalva thrombosis causing peripheral embolism

Periferel emboliye neden olan Valsalva sinüsü trombozu

Fuat Gündoğdu, M.D., Eftal Murat Bakırcı, M.D., Hüsnü Değirmenci, M.D., Necip Becit, M.D.#

Departments of Cardiology and #Cardiovascular Surgery, Medicine Faculty of Atatürk University, Erzurum

Summary – A 44-year-old woman was admitted with the diagnosis of peripheral arterial emboli. Peripheral angiography demonstrated total occlusion of the popliteal artery. The obstruction was successfully resolved with a Fogarty arterial embolectomy catheter. Both transthoracic and transesophageal echocardiography showed a mobile, round thrombus in the noncoronary sinus of Valsalva. The patient did not accept surgery, and anticoagulation with warfarin was initiated. One month after treatment, transthoracic echocardiography demonstrated disappearance of the thrombus in the noncoronary sinus of Valsalva. The patient did not experience any recurrent episode of systemic embolization. This is a rare case of peripheral embolism caused by a thrombus in the noncoronary sinus of Valsalva without aneurysm.

Özet – Kırk dört yaşında kadın hasta periferel arter embolisi tanısıyla hastanemize yatırıldı. Periferel anjiyografide popliteal arterde tam tıkanıklık saptandı. Tıkanıklık Fogarty arteryel embolektomi kateteri ile başarılı şekilde tedavi edildi. Transtorasik ve transözofageal ekokardiyografi incelemelerinde non-koroner Valsalva sinüsünde hareketli, yuvarlak trombüs görüldü. Cerrahi tedaviyi kabul etmeyen hastaya warfarin ile antikoagülan tedaviye başlandı. Antikoagülan tedaviden bir ay sonra yapılan transtorasik ekokardiyografide non-koroner Valsalva sinüsündeki trombüsün kaybolduğu gözlemlendi. Hastada sistemik emboli atağı bir daha görülmeydi. Non-koroner Valsava sinüsünde anevrizma olmaksızın oluşan trombüse bağlı periferel emboli nadir bir durumdur.

Thrombus formation in the sinus of Valsalva without aneurysm is a rare condition. There have been a few reports on sinus of Valsalva thrombosis leading to peripheral embolism.^[1,2] We report on a case of peripheral embolism caused by a thrombus in the noncoronary sinus of Valsalva.

CASE REPORT

A 44-year-old female patient presented with acute onset of left leg pain. She had no systemic illness, had never smoked, and there was no medical history of oral contraceptive use and coronary angiography. On physical examination, blood pressure was 100/60 mmHg, respiratory rate was 20/min, and pulse rate was 85/min. On auscultation, heart sounds were normal without any murmur. Her lungs were clear to auscultation. Posterior tibial, anterior tibial, and dorsalis pedis pulses were not palpable in the left extremity. The electro-

cardiogram showed sinus rhythm. The chest X-ray was normal. The hemo-

Abbreviations:

TEE Transesophageal echocardiography
TTE Transthoracic echocardiography

gram and biochemical parameters, platelet count, antithrombin III, and protein C and S concentrations were all normal. Anticardiolipin antibodies were negative. Peripheral angiography demonstrated total occlusion of the popliteal artery (Fig. 1). Femoral artery embolectomy was performed with a Fogarty arterial embolectomy catheter. The obstruction was successfully resolved. Both TTE and TEE clearly showed a mobile, round mass in the noncoronary sinus of Valsalva, without aneurysm of the sinus, aortic intimal flap, or aortic valve abnormality (Fig. 2a, b). No abnormality was detected in other cardiac structures. The differential diagnosis of the mass included a tumor, vegetation, artifacts, and a thrombus.^[2] After considering the patient's clinical characteristics, echocar-

Received: November 28, 2009 Accepted: February 5, 2010

Correspondence: Dr. Eftal Murat Bakırcı. Atatürk Üniversitesi Tıp Fakültesi, Kardiyoloji Anabilim Dalı, 25050 Erzurum, Turkey.
Tel: +90 442 - 316 63 33 / 2106 e-mail: eftalka@yahoo.com



Figure 1. Complete occlusion at the level of the popliteal artery is seen during peripheral angiography.

diographic characteristics of the mass, and the gross appearance of the specimen removed through the Fogarty catheter, the mass was interpreted as a thrombus. Surgical removal of the thrombus was considered to prevent recurrent thromboembolism, but the patient did not accept surgery, and anticoagulation with warfarin was initiated. The patient was discharged on the 10th day. One month after warfarin treatment, as the patient refused TEE, TTE was performed, which demonstrated disappearance of the thrombus in the noncoronary sinus of Valsalva (Fig. 2c). There were no recurrent episodes of systemic embolization after the initiation of anticoagulation. Even though we did not confirm the pathology of the mass lesion, we concluded that it was a thrombus that disappeared after anticoagulation therapy.

DISCUSSION

Thrombus formation in the sinus of Valsalva without aneurysm is a rare condition. Spontaneous echo contrast in a large, unruptured sinus of Valsalva has been reported to be closely related to the formation of thrombus.^[3] Shahrabani and Jairaj^[4] reported a thromboembolic case associated with a sinus of Valsalva aneurysm. Christiaens et al.^[5] reported a case of thrombus in the noncoronary sinus of Valsalva without associated atherosclerotic lesions or aneurysms similar to our case.

Erosion and rupture of atherosclerotic plaque, degenerative changes in the aortic wall that develop with aging, and hyperthrombogenic state may lead to thrombus

formation.^[6] In our case, there was no apparent cause of increased thrombogenicity and the exact mechanism responsible for thrombus formation was not identified.

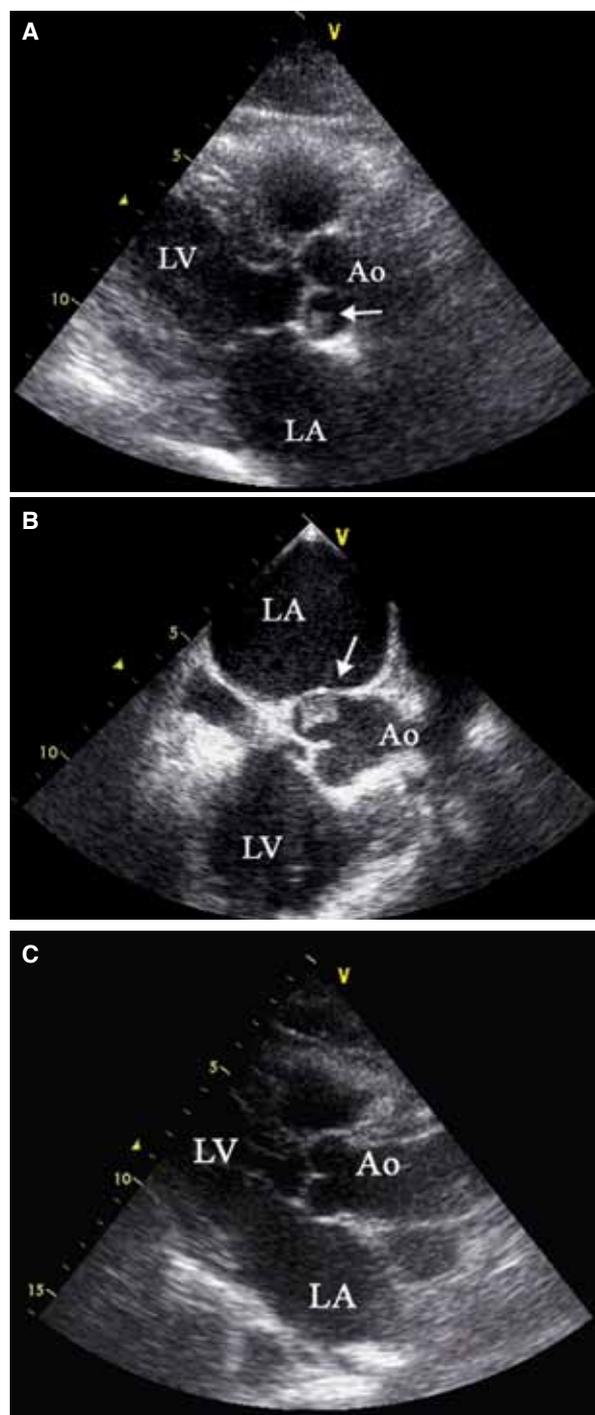


Figure 2. (A) Transthoracic and (B) transesophageal echocardiograms showing a thrombus in the noncoronary sinus of Valsalva. (C) Transthoracic echocardiogram showing the disappearance of the thrombus one month after the initiation of warfarin treatment. Ao: Aorta; LV: Left ventricle; LA: Left atrium.

Transesophageal echocardiography has proved extremely useful in evaluating cardiovascular anatomy and cardiac sources of embolization.^[5] In the present case, TEE clearly showed the thrombus as a mobile, round mass in the noncoronary sinus of Valsalva without aneurysm.

Optimal treatment of sinus of Valsalva thrombosis remains undefined. In most of the reported cases, open heart surgery was the main treatment.^[7,8] Nakata et al.^[9] reported a case of sinus of Valsalva thrombosis which was treated successfully with anticoagulation alone. In our case, the patient did not accept surgery, so anticoagulation therapy was the only option. No recurrent episodes of systemic embolization developed following anticoagulation therapy.

In conclusion, sinus of Valsalva thrombosis should be considered in the differential diagnosis of the causes of peripheral arterial embolism. Echocardiographic evaluation (TTE, TEE) is a useful method in the detection of thrombus in the sinus of Valsalva. Oral anticoagulation may be effective in the treatment of sinus of Valsalva thrombosis.

Conflict-of-interest issues regarding the authorship or article: None declared

REFERENCES

1. Kalangos A, Baldovinos A, Vuille C, Montessuit M, Faidutti B. Floating thrombus in the ascending aorta: a rare cause of peripheral emboli. *J Vasc Surg* 1997;26:150-4.
2. Giesser J, Hüttemann E. A rare cause of peripheral isch-

3. Steinberg E, Wun H, Bosco J, Kronzon I. Spontaneous echocardiographic contrast within an unruptured sinus of Valsalva aneurysm: a potential embolic source diagnosed by transesophageal echocardiography. *J Am Soc Echocardiogr* 1996;9:880-1
4. Shahrabani RM, Jairaj PS. Unruptured aneurysm of the sinus of Valsalva: a potential source of cerebrovascular embolism. *Br Heart J* 1993;69:266-7.
5. Christiaens L, Allal J, Corbi P. Thrombus in a normal sinus of Valsalva: angiographic, multiplane transoesophageal echocardiographic, and surgical findings. *Heart* 1996; 76:287-8.
6. Nagata Y, Miyamoto T, Komura M, Niwa A, Kawaguchi S, Shirai T, et al. Giant organized thrombus in the left sinus of Valsalva causing intermittent left coronary obstruction: an unusual case of acute myocardial infarction. *Circ J* 2004; 68:795-8.
7. Eguchi K, Ohtaki E, Misu K, Aikawa M, Sumiyoshi T, Hosoda S, et al. Acute myocardial infarction caused by embolism of thrombus in the right coronary sinus of Valsalva: a case report and review of the literature. *J Am Soc Echocardiogr* 2004;17:173-7.
8. Choi JB, Choi SH, Kim NH, Jeong JW. Floating thrombus in the proximal aortic arch. *Tex Heart Inst J* 2004;31:432-4.
9. Nakata A, Yoshizawa H, Hirota S, Takazakura E. Sinus of Valsalva thrombosis causing renal infarction. *Intern Med* 2006;45:909-12.

Key words: Anticoagulants/therapeutic use; echocardiography; embolism/etiology; ischemia/etiology; leg/blood supply; sinus of valsalva/pathology; thrombosis/complications/therapy.

Anahtar sözcükler: Antikoagülan/terapötik kullanım; ekokardiyografi; embolizm/etyoloji; iskemi/etyoloji; bacak/kanlanma; Valsalva sinüsü/patoloji; tromboz/komplikasyon/tedavi.