Received: 2013.04.26
Accepted: 2013.06.14
Published: 2013.09.27

ISSN 1507-6164
© Am J Case Rep, 2013; 14: 388-390
DOI: 10.12659/AJCR.889327

Diagnosis of a huge right atrial thrombus during coronary artery bypass graft surgery

Authors' Contribution:
Study Design A
Data Collection B
Statistical Analysis C
Data Interpretation D
Manuscript Preparation E
Literature Search F
Funds Collection G

ABCDEF 1 **Omer Senarslan**
ABCD 1 **Mustafa Zungur**
ABD 2 **İhsan Sami Uyar**
BDF 1 **Samet Uyar**
DF 1 **Talat Tavli**
ABF 2 **Emin Alp Alayunt**

1 Department of Cardiology, Sifa University School of Medicine, Izmir, Turkey
2 Department of Cardiovascular Surgery, Sifa University School of Medicine, Izmir, Turkey

Corresponding Author: Omer Senarslan, e-mail: dromersen@yahoo.com

Patient: Male, 73
Final Diagnosis: Coronary artery thrombosis
Symptoms: Angina pectoris • short of breath
Medication: —
Clinical Procedure: CABG
Specialty: Cardiology

Objective: Management of emergency care
Background: Intra-operative formation of a thrombus in the right heart is rare and might be unrecognized. However, it can be associated with severe consequences, including pulmonary embolism and death.
Case Report: We report the case of a 73-year-old man who presented to the cardiologist with angina pectoris and rare shortness of breath. Coronary artery bypass grafting (CABG) was performed due to multi-vessel disease. Because of hemodynamic insufficiency, an intra-operative transesophageal echocardiogram (TEE) was performed and a huge free-floating thrombus was detected. Multiple thrombi were removed from the right heart and pulmonary arteries. The patient died after cardiopulmonary bypass support and 12 hours of intensive care.
Conclusions: In this case report, we emphasize the importance of the TEE during the preoperational period and during CABG, as well as in the preoperative evaluation of pulmonary hypertension.

Key words: thromboembolism • intra-operative transesophageal echocardiography • coronary artery bypass grafting

Full-text PDF: <http://www.amjcaserep.com/download/index/idArt/889327>

662 — 3 8

Background

Intra-operative formation of a thrombus in the right heart is rare and might be unrecognized. However, it can be associated with severe consequences, including pulmonary embolism and death. Accurate preoperative preparation of patients is very important for all cardiac surgery. TEE is very important, not only for valvular surgery; it has special importance during CABG. In this article, we discuss a case that demonstrates the importance of TEE.

Case Report

A 73-year-old man presented to the cardiologist with angina pectoris and rare shortness of breath. His past medical history included hypertension but no history of deep venous thromboembolism. A coronary angiogram was performed at another medical center. Since multi-vessel coronary disease (LAD: %90–%60, LAD D1: %70, LCX: proximal plaque, CX OM3: %70, RCA: plaque) had been detected, he was referred to our medical center for CABG. Transthoracic echocardiography (TTE) showed a dilated right atrium and ventricle and elevation of pulmonary artery pressure (45–50 mmHg). His left ventricle ejection fraction was normal and there was no local motion defect. There was no mass detected in the heart chambers.

CABG was scheduled electively and triple bypass with on-pump surgery was performed. There were no technical problems during surgery, but we could not separate the patient from cardiopulmonary bypass. Because of this hemodynamic problem, we performed intra-operative TEE, which revealed a long, thin, and free-floating mass in the right atrium (Figure 1). The right atrium was opened and explored (Figure 2). The mass was seen as an organized thrombus and was not adhered to any part of the right atrium. After removing the thrombus from the right atrium, we could not achieve sufficient hemodynamic status.

Figure 1. Transesophageal echocardiography views of free-floating mass in the right atrium (arrows).

Figure 2. The thrombus in right atrium in surgery.

Figure 3. Removed thrombi from right atrium and pulmonary arteries.

We decided to explore bilateral pulmonary trunk. Many thrombi of various sizes were removed from the right and left pulmonary arteries (Figure 3).

After 108+240 minutes of cardiopulmonary bypass support, the patient was separated from the cardiopulmonary bypass with inotropic and intra-aortic balloon pump support and was taken to the intensive care unit when we achieved adequate hemodynamic status with medical support. The patient died 12 hours after surgery, despite all efforts and maximum inotropic support, due to right heart failure and persistent pulmonary hypertension.

Discussion

Free-floating right heart thrombi can be seen in 4–18% of patients presenting with acute pulmonary embolism [1–3]. Right heart thrombi may develop within the right heart chambers or

they may be peripheral venous clots that accidentally migrated to the right heart on their way to the lungs [4]. A case series reported a high rate (44.7%) of in-hospital mortality due to sudden pulmonary embolism [5]. The overall mortality rate in patients with PTE has been reported as 28% and as high as 100% when patients are untreated [6]. TTE is usually sufficient for the diagnosis of right heart thrombi and is considered a screening test. TTE has 50–60% sensitivity for detection of right heart thrombi but may underestimate the clot size. TEE not only detects the thrombus in the heart with higher accuracy, but it may also allow diagnosis of PTE with 80% sensitivity and 100% specificity in patients with suspected massive PTE [7,8]. However detecting thrombi during CABG is very rare.

Many cases of free-floating right heart thrombi have been reported in the literature, but in this report we presented a case of free-floating right heart thrombi leading to massive pulmonary embolism during CABG. All patients electively scheduled

for CABG and who have pulmonary hypertension investigated in preoperative TTE and with no mass detected in the right heart chambers, should be evaluated very carefully for chronic PTE.

Conclusions

There is no general consensus about performing routine TEE for elective CABG. In the presence of an emergency, intra-operative TEE should be performed during CABG. Our case is an interesting and very rare situation that occurred during CABG. We emphasize the importance of TEE during the preoperative period and during CABG, as well as in preoperative evaluation of pulmonary hypertension.

Conflict of interest

There is no conflict of interest.

References:

1. Goldhaber SZ, Visani L, De Rosa M: Acute pulmonary embolism: clinical outcomes in the International Cooperative Pulmonary Embolism Registry (ICOPER). *Lancet*, 1999; 353: 1386–89
2. Torbicki A, Galié N, Covezzoli A et al: Right heart thrombi in pulmonary embolism: results from the International Cooperative Pulmonary Embolism Registry. *J Am Coll Cardiol*, 2003; 41: 2245–51
3. Chartier L, Béra J, Delomez M et al: Free-floating thrombi in the right heart: diagnosis, management, and prognostic indexes in 38 consecutive patients. *Circulation*, 1999; 99: 2779–83
4. Bhargava M, Dincer E: Case Report Traveling Thrombus in the Right Atrium: Is It the Final Destination? *Case Rep Pulmonol*, 2012; 2012: 378282
5. Chartier L, Béra J, Delomez M, et al: Free-floating thrombi in the right heart: diagnosis, management, and prognostic indexes in 38 consecutive patients. *Circulation*, 1999; 99(21): 2779–83
6. Rose PS, Punjabi NM, Pearse DB: Treatment of right heart thromboemboli. *Chest*, 2002; 121(3): 806–14
7. Schwartzbard AZ, Tunick PA, Rosenzweig BP, Kronzon I: The role of transesophageal echocardiography in the diagnosis and treatment of right atrial thrombi. *J Am Soc Echocardiogr*, 1999; 12(1): 64–69
8. Pruszczyk P, Torbicki A, Pacheco R et al: Noninvasive diagnosis of suspected severe pulmonary embolism: TTE versus spiral CT. *Chest*, 1997; 112(3): 722–28