**Case
Report**

Spontaneous Splenic Rupture Immediately after Coronary Bypass Grafting

Mehmet Guler, MD,¹ and Birol Yamak, MD²

A 54-year old man underwent coronary artery bypass graft for occlusion of three coronary arteries. There was no hematological abnormality detected preoperatively and the patient had normal coagulation tests and platelet count before the operation. During the first 24 hours after the operation, hemorrhagic drainage from the chest tubes was 700 ml ,and on postoperative day 1, he underwent reoperation. There was no further drainage from the chest tubes after re-operation but hematocrit level continued to fall. After having ruled out the thoracic source of bleeding, abdominal computed tomography was performed and confirmed intraperitoneal fluid accumulation and determined splenic rupture. The patient underwent emergent splenectomy and discharged from hospital on the sixth postoperative day with recovery.

Keywords: coronary artery bypass graft, complication, splenic rupture

Introduction

Intra-abdominal bleeding after cardiac surgery is a rare but life-threatening complication.^{1–4)} Splenic rupture is rarely considered if shock occurs immediately after coronary artery bypass graft (CABG). We present an unusual case of hemoperitoneum after CABG due to a spontaneous splenic rupture occurring 45 hours after operation.

Case Report

A 54-year old man underwent CABG for occlusion of three coronary arteries. Cardiopulmonary bypass time

was 75 min and aortic clamp time was 38 min. There was no hematological abnormality detected preoperatively, and the patient had normal coagulation tests and platelet count before the operation. During the postoperative first 24 hours, hemorrhagic drainage from the chest tubes was 700 ml and the patient received six units of erythrocyte suspension. He underwent re-operation on the first postoperative day. There was no further drainage from the chest tubes after re-operation, but hematocrit level continued to fall. The hypotension and tachycardia were persisted and additional four-unit transfusion was needed during fifteen hours after re-operation. After having ruled out the thoracic source of bleeding, a general surgeon was consulted due to abdominal distension and tenderness in physical examination. Paracentesis was performed with suspicion of hidden intra-abdominal bleeding and it was positive for bloody fluid. Abdominal computed tomography (CT) was performed urgently within minutes. CT confirmed intraperitoneal fluid accumulation and determined splenic rupture (**Fig. 1**).

The patient underwent emergent splenectomy and grade IV splenic laceration was detected intraoperatively. Blood and coagulum in the peritoneal cavity was estimated at about 1500 ml in total. After splenectomy, the patient's condition stabilized and he was discharged from

¹Department of Surgery, Gaziantep University School of Medicine, Gaziantep, Turkey

²Department of Cardiovascular Surgery, Adiyaman University School of Medicine, Adiyaman, Turkey

Received: May 2, 2011; Accepted: June 13, 2011

Corresponding author: Mehmet Guler, MD. Gaziantep University Hospital, Ataturk m. 11. s. Ayintap Sitesi 6/4 27560 Gaziantep, Turkey

Email: dr.mguler@hotmail.com

©2011 The Editorial Committee of *Annals of Thoracic and Cardiovascular Surgery*. All rights reserved.

hospital on the sixth postoperative day with recovery.

The histological examination did not show any pathological condition predisposing splenic rupture. Results of test for malaria, serological markers of hepatitis and mononucleosis were all negative. Therefore, the patient's condition was accepted as a spontaneous rupture of the spleen.

Discussion

The most common cause of splenic rupture is trauma. Less frequently several pathological conditions such as hematological diseases, metabolic disorders or infections may predispose to spontaneous rupture of the spleen. In our case, the patient had no known trauma history and did not show any of these pathological conditions. It could also be related to chest tube insertion but chest tubes were appropriate position and diaphragm was intact.

We presumed that the patient had an antecedent asymptomatic splenic lesion and a delayed bleeding was occurred due to heparinization necessary during the cardiopulmonary bypass. Baudet suggested that the force transferred to the spleen is sufficient to damaged the parenchyma without injured the splenic capsule.⁵⁾ Anticoagulation during cardiopulmonary bypass, although subjected to reversal at the end of surgery, may insidiously cause intra-splenic bleeding, hematoma enlargement and, consequently, rupture of the spleen.^{1,2)} In addition, it has been claimed that the oscillating saw used for sternotomy might be a cause of splenic capsular tear.²⁾ Simpson and Ajuwon supposed that a capsular injury and perisplenic hematoma is formed at the time of trauma and is tamponaded by surrounding organs delaying its rupture at a later date.⁶⁾ Rupture of a pseudoaneurysm of splenic artery branches is also another potential mechanism for delayed splenic rupture.⁷⁾

There are a few reported cases of splenic rupture after other types of cardiac surgery but to our knowledge; this is the first reported case of spontaneous splenic rupture after CABG. In the early postoperative period of CABG, the clinical status of the patients in the intensive care unit may mask signs of an intraabdominal bleeding. In conclusion, if shock and blood loss persist after CABG, with no thoracic hemorrhage, abdominal sources of bleeding, such as splenic rupture, should be investigated.

Fig. 1 Computed tomographic scan of abdomen showing grade IV laceration of spleen.

Disclosure Statement

There are no financial support and any conflict of interest.

References

- 1) Mitchell C, Riley CA, Vahid B. Unusual complication of heparin-induced thrombocytopenia after mitral valve surgery: spontaneous rupture of spleen. *Ann Thorac Surg* 2007; **83**: 1172-4.
- 2) Ceresa F, Francio G, Aldo Intili P, et al. Splenic tear causing a hemoperitoneum after cardiac surgery. *Interact Cardiovasc Thorac Surg* 2009; **9**: 1049-50. Epub 2009 Sep 21.
- 3) Yang MH, Wu CC, Jean WH, et al. Spleen rupture after mitral valve replacement for infective endocarditis. *Acta Anaesthesiol Taiwan* 2008; **46**: 191-3.
- 4) Georgios Dimitrakakis, Ulrich Von Oppell, Georgios Zilidis, et al. Splenic rupture complicating aortic valve replacement for bacterial endocarditis. *Interact Cardiovasc Thorac Surg* 2008; **7**: 138-40.
- 5) Kluger Y, Paul DB, Raves JJ, et al. Delayed rupture of the spleen--myths, facts, and their importance: case reports and literature review. *J Trauma* 1994; **36**: 568-71.
- 6) Simpson RA, Ajuwon R. Occult splenic injury: delayed presentation manifesting as jaundice. *Emerg Med J* 2001; **18**: 504-5.
- 7) Hiraide A, Yamamoto H, Yahata K, et al. Delayed rupture of the spleen caused by an intrasplenic pseudoaneurysm following blunt trauma: case report. *J Trauma* 1994; **36**: 743-4.