Case report

Cardiac compression following cardiac surgery due to unrecognised hiatus hernia

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Abstract

A 76-year-old man who had undergone a routine coronary artery bypass grafting operation developed severe haemodynamic instability in the early postoperative period in spite of multiple inotropic supports. Due to persistent instability of haemodynamics and worsening acidosis his chest was re-explored with detection of no obvious abnormality. An intra-aortic balloon pump (IABP) was inserted for additional support. The chest had to be left open overnight and closed formally next morning. A chest X-ray at that stage showed a large hiatus hernia with huge gastric dilatation compressing the heart. Decompressions of the stomach lead to dramatic improvement in his circulatory status with rapid weaning of inotropes and IABP and he could be extubated. This case illustrates the importance of recognising the presence of hiatus hernia in preoperative chest X-ray and prophylactic NG tube insertion at the time of cardiac surgery in these cases.

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1. Case report

A 76-year-old ex-smoker with previous history of myocardial infarction presented with recent onset progressive exertional angina and shortness of breath. His coronary angiography confirmed severe left main stem coronary artery stenosis with further stenosis of left anterior descending and circumflex arteries. The echocardiogram showed mild-to-moderate mitral regurgitation and preserved left ventricular function. His routine chest X-ray was deemed to be satisfactory. His significant comorbidities were previous TIA and an abdominal aortic aneurysm measuring 5.4 cm.

He underwent a routine double coronary artery bypass grafting. The left anterior descending artery and the intermediate arteries were bypassed using the left internal mammary artery and a piece of saphenous vein graft, respectively. The patient was weaned off the cardiopulmonary bypass easily at first attempt and transferred to intensive care unit (ICU). He was stable initially on arrival in the ICU; however, he soon became haemodynamically unstable. He became hypotensive with mean arterial blood pressure (MAP) dropping to 50s, and his ECG showed ischaemic changes. After failing to respond to preload optimisation he was commenced on escalating doses of multitude of inotropes and vasoconstrictors with no satisfactory improvement. In spite of a lack of objective evidence of tamponade on transthoracic echocardiography, the chest was re-explored on clinical suspicion of tamponade or graft malperfusion. Upon opening the chest the mean arterial pressure improved to 80 and the ST segment changes on electrocardiogram returned back to normal. There was no pericardial collection and the grafts were found to be patent. When we attempted to close the chest he became unstable again. His chest was left open and an intra-aortic balloon pump (IABP) was inserted to support the circulation.

The following morning when his chest X-ray was reviewed, a large gastric bubble was noticed in the chest. A nasogastric tube was passed and the stomach was decompressed. To our delight, this lead to a rapid and dramatic improvement in the patient’s condition. The chest was closed successfully followed by rapid weaning of the inotropes. The patient was extubated on second postoperative day followed by removal of IABP. He had further problems in the ward requiring ICU readmission with pneumonia, sepsis, methicillin-resistant Staphylococcus aureus (MRSA) wound infection and sternal dehiscence. He required prolonged antibiotic therapy, respiratory support, tracheostomy and sternal rewiring. He was discharged home 1 month after the operation. He continues to do well on follow-up 3 years after the surgery. His hiatus hernia was further confirmed by CT scan in an outpatient study (Fig. 1).
Gastric dilatation is a common observation in the chest radiographs in the early postoperative period following cardiac surgery. However, cardiac compression mimicking cardiac tamponade due to distended stomach in the setting of cardiac surgery is uncommon. To our best knowledge this is the first case of cardiac compression after cardiac surgery, secondary to a hiatus hernia, to be reported in the literature. The distended stomach in the thorax caused an extrinsic compression of the heart resulting in cardiogenic shock. The presence of this abnormality in the preoperative chest X-ray was unnoticed due to the complete lack of any previous symptoms or history of dyspepsia. Echocardiographic features of abnormal oesophageal/gastric masses including hiatus hernia are described in literature but were not helpful in our case [1]. The true cause was realised only after X-ray radiographs in the early postoperative period following cardiac surgery and the stomach should be decompressed promptly if hiatus hernia with gastric distension is noticed.

There are some previous reports of gastrointestinal causes of pericardial compression producing haemodynamic compromise in non-cardiac surgery setting. Kalra et al. have reported a case of strangulated gastric volvulus causing cardiac compression resulting in electromechanical dissociation [2]. The patient was successfully resuscitated followed by surgical repair with good outcome. This can occur as a complication of antireflux surgery near the oesophagogastric junction [3]. Fatal cardiac tamponade has been reported after surgical repair of paraoesophageal hernia [4]. The cause of tamponade was found to be bleeding from the coronary vein laceration by the stapler used to fix the hernia. Presentation with tamponade can also occur several months to years after surgical repair as reported in the two cases by de-Bruyne et al. [5]. In both cases tamponade was initially relieved by gastric drainage, pericardiocentesis and antibiotics. Subsequent contrast studies led to identification of fistula between GI tract and pericardium. Surgical repair with closure of fistula led to favourable outcome in both the cases.

The only previous report of a case of hiatus hernia complicating cardiac surgery is the one reported by Hasegawa et al., in a Japanese journal [6]. In contrast to our case the hernia was recognised prior to surgery. The incarcerated hiatus hernia caused tamponade and inability to wean off the CPB following an emergency replacement of aorta for acute type A aortic dissection. After a laparotomy and repair of hernia the patient was successfully weaned off the CPB. Routine placements of nasogastric tubes continue to remain debatable. In a randomised controlled trial Russell et al. showed that NG tubes are not routinely necessary for cardiac surgery [7]. The subgroups of patients with paraoesophageal hernia, however, are likely to benefit from routine placement of such tubes.

Most hiatus hernias are asymptomatic and are discovered incidentally. They are more common in western countries and the frequency increases with age, from 10% in patients younger than 40 years to 70% in patients older than 70 years [Waqar A Qureshi. Hiatal hernia. E-Medicine; 2006; available at: www.emedicine.com/med/topic1012.htm. Correspondingly a sizeable proportion of patients coming for cardiac surgery have clinical history or radiological evidence of this abnormality. Once the presence of hiatus hernia is recognised, preventive steps can be taken to ensure a smooth postoperative recovery [8]. This also illustrates the fact that when a patient deviates from the norm a careful review of the chest X-ray must be performed and decompression of the stomach should be carried out promptly if hiatus hernia with gastric distension is noticed.

3. Conclusion

Prophylactic nasogastric tube should be placed routinely prior to cardiac surgery in all patients presenting with a recognised hiatus hernia. Presence of hiatus hernia should be carefully looked for in all chest X-rays following cardiac surgery and the stomach should be decompressed promptly if it is thought to be present.

References


