



Early Acute Aortic Dissection after Coronary Artery Bypass Graft

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Abbreviations; CABG; coronary artery bypass graft, CT; computed tomography, CTPA; computed tomography of pulmonary artery, ITU; intensive treatment unit, MRSA; methicillin resistant staphylococcus aureus, PCI; percutaneous coronary intervention

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ABSTRACT

Acute aortic dissection is a rare but potentially fatal complication of CABG. Despite its low incidence it has a high mortality. Whereas intraoperative and late dissections are well described in the literature, early dissections are not. The latter may present atypically eluding diagnosis. Timely chest CT aids diagnosis.

Key words: Aortic dissection, coronary artery bypass graft, acute

Koroner Arter Baypas Grafi Sonrası Erken Gelişen Akut Aortik Diseksiyon

Akut aortik diseksiyon nadir fakat KABG'nin potansiyel olarak ölümcül bir komplikasyonudur. Düşük görülme sıklığına rağmen yüksek mortaliteye sahiptir. Literatürde intraoperatif ve geç diseksiyon iyi tanımlanmasına rağmen erken diseksiyon tanımlanmamıştır. Bu nedenle tanısı gözden kaçabilir fakat zamanında torakal BT tanıya yardımcı olabilir.

Anahtar kelimeler: Aortik diseksiyon, koroner arter baypas grafi, akut

INTRODUCTION

CABG has an operative mortality of less than 1%. Of this 3 to 5 % is due to aortic dissection (1). The operation also carries morbidity that may be understated. These include myocardial infarction, stroke, prolonged ventilation, wound infection, bleeding requiring blood transfusion or reoperation, and acute renal failure. Other common complications include pleural effusions, heart failure, arrhythmias and venous thromboembolism. Aortic dissection is considered a rare complication. Although rare this complication can be potentially fatal (2-4).

CASE

A 78 year old Caucasian gentleman with no previous history of ischaemic heart disease presented to the emergency department with a non ST segment elevation myocardial infarction. He was a smoker, hypertensive, had a hiatus hernia and an abdominal aneurysm repaired electively ten years ago. Angiogram revealed triple vessel disease including a tight ostial left main stem stenosis. Left ventriculography revealed good LV function. One week later he underwent "on pump" CABG. Post operatively he developed atrial fibrillation, a chest infection and an infected leg wound that were all successfully treated. He was discharged six days after his CABG. Two days after discharge he was readmitted to his local hospital with dyspnoea, leg oedema, a productive cough and lethargy. Clinically he was in fast atrial fibrillation, had signs of a chest infection and a left pleural effusion. He was treated with digoxin, amiodarone and antibiotics for his Klebsiella pneumonia. He became increasingly unwell, was hypoxic, anaemic and hypotensive. Cardiac failure worsened and he developed bilateral pleural effusions, hypoalbuminaemia (25mg/dl), an abdominal wall haematoma and urinary retention. A CTPA done to exclude a pulmonary embolus showed a dissection extending from the aortic root and up to but not involving not involving the aortic arch. It was felt because of his general deterioration in his health that the risk of redo surgery outweighed the risk of rupture or a further acute event. He was therefore treated conservatively. His poor respiratory function, recurrent chest infections and persistent basal collapse warranted a three week ITU stay. His sternal wound dehiscd becoming infected with MRSA. He survived a cardiac arrest. He had a prolonged hospital stay of four months. As his condition improved nearer the end of his stay he underwent a joint

cardiothoracic and plastic surgery procedure to remove his sternal wires, debride his wound and transpose a pectoralis major flap. He was transferred for rehabilitation where he died 7 months after his CABG.

DISCUSSION

CABG has an operative mortality of less than 1%. Of this 3 to 5 % is due to aortic dissection [1]. The operation also carries morbidity that may be understated. These include myocardial infarction, stroke, prolonged ventilation, wound infection, bleeding requiring blood transfusion or reoperation, and acute renal failure. Other common complications include pleural effusions, heart failure, arrhythmias and venous thromboembolism. Aortic dissection is considered a rare complication. Although rare this complication can be potentially fatal (2-4).

It can occur acutely intra-operatively, early within the first month or late post operatively (2-4). There is limited data on the true incidence of this complication occurring in the early postoperative period after CABG. Ruchat retrospectively reviewed 8624 cardiac surgical procedures and found 10 patients (0.012%) to have a dissection post operatively (4). Of these 7 were diagnosed intraoperatively and 3 within the first month afterwards.

The predisposing factors for aortic dissection in the general population include are well known. In younger patients positive family history, vasculitis, collagen disorders, anomalies of anatomy such as bicuspid aortic valve and coarctation of the aorta can also predispose to aortic dissection. It also occur as complications of cardiac catheterisation and surgical interventions including CABG and aortic valve replacement. Specifically aortic dissection occurs more frequently after CABG in those aged 60-70 years, male, hypertensives with existing or a history of abdominal aortic aneurysm (5). It is interesting that our gentleman exhibited all these characteristics. Unfortunately whilst EuroSCORE can predict mortality after CABG and valve surgery it does not predict who are at high risk of aortic dissection after CABG.

The site of dissection is variable and includes the aortic cannulation site, the aortic cross clamp site, the partial occlusion clamp site, the aortotomy site, the site of the vein anastomoses, cardioplegic site and site of femoral cannulation in the case of a retrograde dissection of the



Figure 1.



ascending aorta (1). Various mechanisms have been proposed for the dissection. Chavanon et al retrospective review of 3031 patients undergoing CABG over a two year period showed a statistically significant increased risk in patients undergoing off pump CABG as opposed to on pump CABG (6).

Classically aortic dissection is thought to present with severe, central chest pain radiating to the back or abdomen that may be associated with cardiovascular collapse, neurological symptoms and heart failure. Aortic dissection that presents early after CABG may present atypically eluding diagnosis (5,7). If suspected in the early postoperative period however it can readily be diagnosed with CT (7). Once detected aortic root reconstruction and replacement of the arch should be considered.

The literature suggests that males, smokers, hypertensives, those in the seventh decade with a previous or present abdominal aneurysm might be at increased risks of dissecting after CABG. In those without the classic presentation how can dissection be detected? To do this one must first be aware of this after CABG, consider it and if any doubt perform a CT of the thorax or transoesophageal echocardiogram to exclude it. This is important since despite the low incidence of this complication it has a high mortality. Early recognition is imperative. Another issue is whether the morbidity associated with CABG is understated? Should patients undergoing CABG be warned about all the small but serious complications?

The key learning points of this case report are to emphasise that aortic dissection is a rare but potentially fatal complication of CABG that may present early after

CABG. Timely chest CT aids diagnosis. There is significant benefit in earlier detection with respect to prognosis. Finally although CABG generally has an overall low mortality it is still one of the highest risk operations and may be associated with significant postoperative morbidity.

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