

# A case of sudden, severe, crushing chest pain

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Emergencies can spring up at any time and in many incarnations. Are you adequately equipped to deal with them? Each month we present a case study in emergency medicine based on real cases and events. Would you have been able to help this patient?

## Interest: personal and professional

A close childhood friend rings you at home one night. He asks you whether you recall a certain family name. At first, you don't – he jogs your memory. It was the surname of a lovely little girl who died, tragically, from unusual intracerebral pathology; with kids of your own, you do not need any further reminder. He tells you that, last week, the girl's mother had come into the emergency department where you do some regular shifts. Your friend continues in a sombre tone, and it does not take much intuition to know that you are not going to feel good about the rest of the story.

Early in the conversation, you make it clear that you could tell him nothing about the patient even if you were familiar with the case, as you have no right or permission to disregard confidentiality. You also take quite some effort

to point out that, as you only have his – third hand – information to go by, it would be stupid of you to prognosticate. He is OK with this.

The very next day, towards the end of your regular shift, the waiting list on the computer screen dwindles thanks to a couple of doctors beginning their shifts (due to the staggered shift starts). You take the opportunity to get the permission of the emergency medicine consultant to whip up to the wards to say 'Hi' to one of your patients.

On your way out the door, one of the senior part-timers in the department asks you which ward you are off to – he asks if you could check out and give him feedback on a patient he treated last week who is in the nearby critical care unit. Even the duty registrar is thirsty for feedback on the same patient, as he resuscitated her – the lady of the phone call!

## Diagnosis: critical

Your own patient is very grateful for your visit. In the critical care area, you introduce yourself to the charge sister and flash your photo ID. At the same moment, the resident on duty, who knows you from the emergency department, comes over and fills you in about the 'good pickup by the emergency docs'.

## Table 1. Aortic dissection: clinical clues

- Risk factors – hypertension, Marfanoid habitus, pregnancy
- Characteristic chest pain – severe, abrupt onset, maximal from onset, very difficult to relieve even with large doses of narcotics
- Radiation – to neck, face (ascending aorta); to back (descending aorta)
- A high blood pressure in a patient who looks shocked
- Unequal pulses and blood pressures in arms
- A nondiagnostic ECG
- Complications – dilatation of aortic annulus leading to acute aortic regurgitation; aortic rupture leading to cardiac tamponade and then death

Source: Modified with permission from Saccasan P, Whelan A. The patient with chest pain, dyspnoea or haemoptysis. In: Fulde GWO, ed. Emergency medicine. 3rd ed. Sydney: MacLennan & Petty, 1998: 46.

The 52-year-old woman had been playing golf when she experienced sudden, severe, crushing chest pain. Very rapidly, after a mobile phone call, an ambulance arrived at the course and took her to the emergency department.

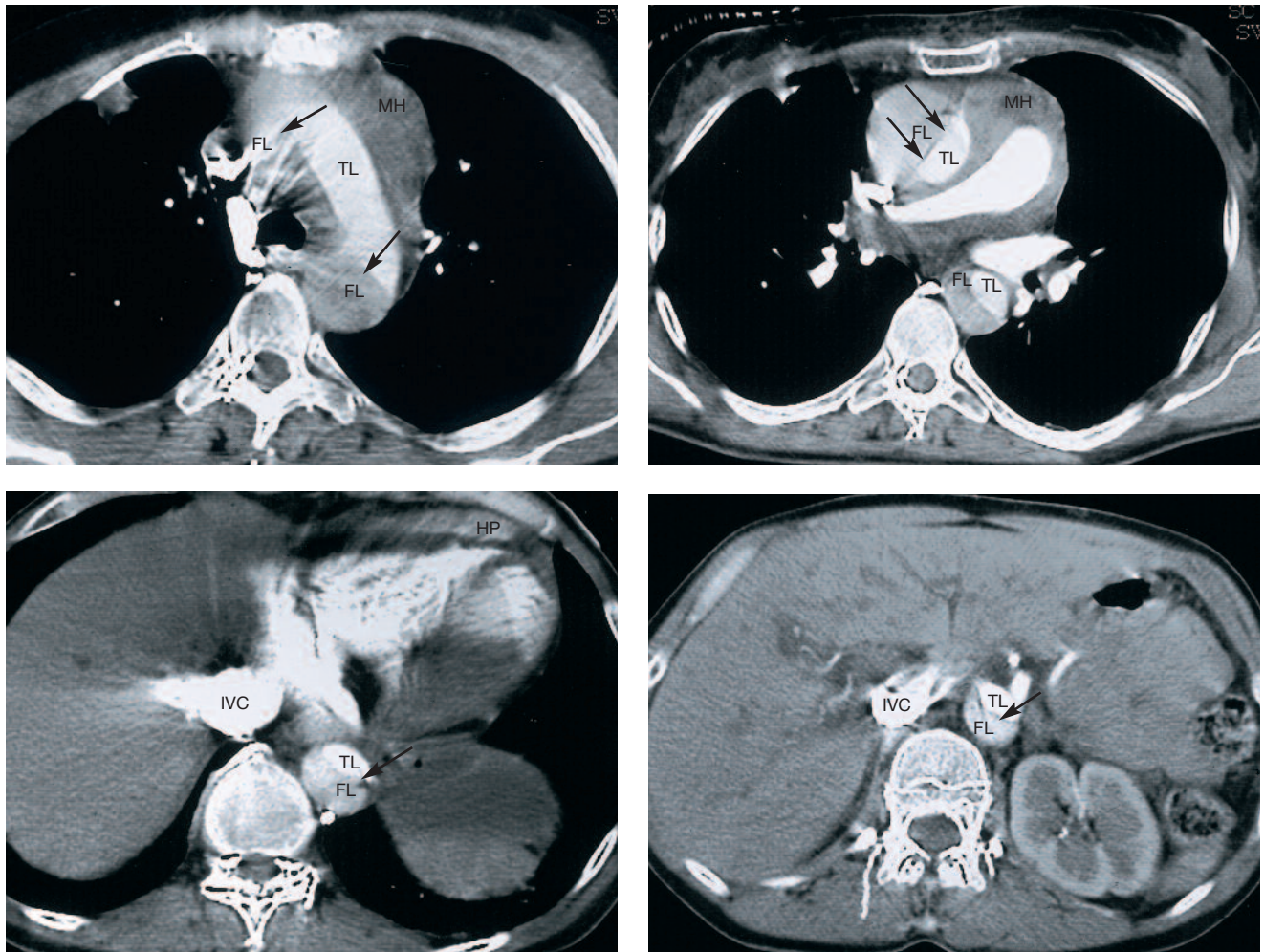
Once there, she still looked awfully sick, rating the pain as 10 out of 10. The pain radiated to the neck and there was some tingling in the left arm but no other radiation.

Due to such a dramatic and serious presentation, a registrar and a senior part-timer as well as several nurses accompanied the trolley-bound patient from the ambulance to the resuscitation area.

The senior part-timer quickly made the diagnosis (see Table 1).<sup>1</sup> Given the story and the fact that two Anginine tablets had made no difference, an obvious difference in arm pulses pointed

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continued



Figures a to d. CT spiral angiography. Dissection of the aorta is seen starting from the root into the arch and continuing down in the abdominal aorta almost to the level of the aortic bifurcation. Contrast flows through the true lumen rapidly, and slowly or not at all through the false lumen giving differential opacification. The thin line separating the two is the intimal flap (arrows). In addition, there is a mediastinal haematoma and a haemopericardium. Reflux of contrast was noted in the inferior vena cava and the main hepatic veins.

Legend: TL = true lumen  
 FL = false lumen  
 MH = mediastinal haematoma  
 HP = haemopericardium  
 IVC = inferior vena cava

to the diagnosis. Most of the remaining pieces of the puzzle fell into place quickly:

- blood pressure, left arm 150/50 mmHg, right arm 90/50 mmHg
- pulse oxygen saturation, 100%
- ECG, a sinus rhythm of 62 beats per minute with no ischaemic changes.

Then, during the rapid succession of IV line insertion, taking bloods for tests

and cross-matching, phone calls to the cardiothoracic surgeon, theatre, and anaesthetist, as well as very quickly done CT spiral angiography (Figures a to d), a new, albeit faint, murmur of aortic incompetence could be heard. This radiological investigation confirmed the provisional diagnosis of dissection of the aorta. A transoesophageal echo would have been useful; however, they

are hard to organise out-of-hours whereas a CT is readily available and may reveal additional pathology – for example, a pulmonary embolus.

There was little relief of the pain with IV morphine.

### Treatment: surgical

The critical care resident told you this woman was very lucky – the diagnosis

## Table 2. Aortic dissection: classification and management

### Classification

Type A – involving the ascending aorta

Type B – dissection distal to the left subclavian artery

### Management

Pain relief – intravenous narcotics

Intravenous antihypertensives – sodium

nitroprusside (titrated to achieve systolic pressure of 100–120 mmHg); beta-blockers (to reduce shearing force on aorta)

Surgery – especially for type A aortic dissection

Source: Modified with permission from Sammel N, Benson R. Emergency treatment of hypertension. In: Fulde GWO, ed. Emergency Medicine. 3rd ed. Sydney: MacLennan & Petty, 1998: 76.

was made quickly, the surgeon was in-house, and she was up in theatres very quickly. The approximate total time from onset of chest pain to surgery was one hour. Without such a speedy course, the patient's chance of survival was virtually nil; with it, the chance of survival increased, but was by no means assured.

The operation performed was a Bentall's procedure – replacing the ascending

aorta with a prosthetic graft, with reimplantation of the coronary arteries into the graft. It required some five hours of cardiac bypass and 45 minutes of circulatory arrest.

The treatment of aortic dissection is summarised in Table 2.<sup>2</sup>

Postoperatively, there were some transient peripheral neurological symptoms of the left leg and foot, possibly due to some spinal ischaemia.

The patient was now ambulant one week after presentation and looking forward to discharge the following week.

### A job well done

Giving your report to the docs on your return to the emergency department, you make a big point of emphasising how impressed the cardiac surgeons were by the care provided there – and we all know how hard they are to please! **MT**

## References

1. Saccasan P, Whelan A. The patient with chest pain, dyspnoea or haemoptysis. In: Fulde GWO, ed. Emergency medicine. 3rd ed. Sydney: MacLennan & Petty, 1998: 46.
2. Sammel N, Benson R. Emergency treatment of hypertension. In: Fulde GWO, ed. Emergency medicine. 3rd ed. Sydney: MacLennan & Petty, 1998: 76.