

# DOCTOR, I CANNOT MOVE MY LEG! A CASE REPORT OF AORTIC DISSECTION

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## **Abstract**

Aortic dissection, a condition where the aorta tears, is the most frequently occurring life-threatening condition affecting the aorta, happening 2-3 times more often than the rupture of the abdominal aorta. If left untreated, 33% of patients die within 24 hours, and 50% die within 48 hours. As a result, early identification and management of the condition are critical in determining patient outcomes. We highlight a case of atypical presentation of aortic dissection in which the patient demonstrated bilateral lower limb weakness without any pain. We illustrate the vital role played by point-of-care ultrasound (POCUS) echocardiography in diagnosing the condition.

**Keywords:** Aortic Dissection, Transoesophageal Echocardiography

## **Introduction**

Aortic dissection is a life-threatening condition in which the inner layer of the aorta tears, allowing blood to flow between the layers and causing the aorta to weaken, eventually leading to rupture. Early diagnosis and treatment are crucial for improving of patient outcomes. Point-of-care ultrasound (POCUS) has emerged as a valuable tool for the rapid diagnosis of aortic dissection. It is non-invasive, readily available, and can be performed at the bedside, making it a useful adjunct to traditional diagnostic methods. According to a prospective pilot study by Wang et al. (1), POCUS has a sensitivity of 86.4% and a specificity of 100% in diagnosing aortic dissection, making it a reliable method for initial screening and triage. This case report will explore the role of POCUS in diagnosing aortic dissection and its potential benefits in managing this critical condition.

## **Case presentation**

A 64-year-old premonitory independent male with underlying diabetes mellitus and hypertension presented with a three-day history of progressively worsening bilateral lower limb weakness, which caused an inability

to ambulate upon presentation and remained unresolved despite taking medication from a private clinic. Apart from this, he denied having any chest pain, shortness of breath, abdominal pain, or recent falls or trauma. There were also no complaints of loose stools, vomiting, or fever.

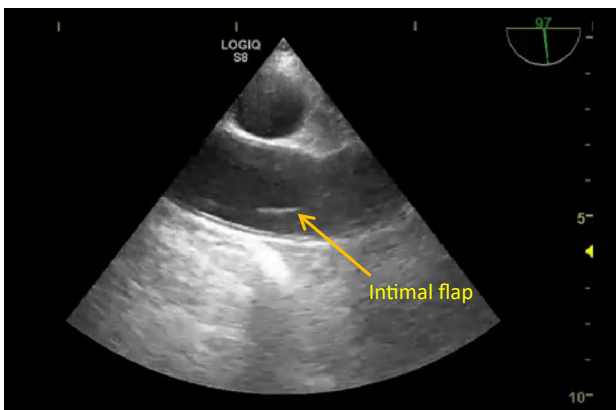
Upon presentation, the peripheral perfusion was preserved, with a normal pulse and respiratory rate; however, the blood pressure was markedly low at 88/54 mmHg despite adequate fluid resuscitation that was subsequently supported with an inotrope.

No radio-radial or radio-femoral signals were detected. A focused neurological examination revealed the power of 2/5 of the bilateral lower limb with preserved power of the bilateral upper limb. The sensory component for the patient was found to be 0/2 over the bilateral lower limb from level of T10 and below. Distal pulses (popliteal and dorsalis pedis) were palpable, with an intact anal tone. Other systemic examinations were unremarkable. Subsequently, the lower limbs became progressively cold, and the distal pulses weakened. Skin discolouration was noted (patient's skin tone was losing colour), starting from below the nipple region and down (Figure 1).

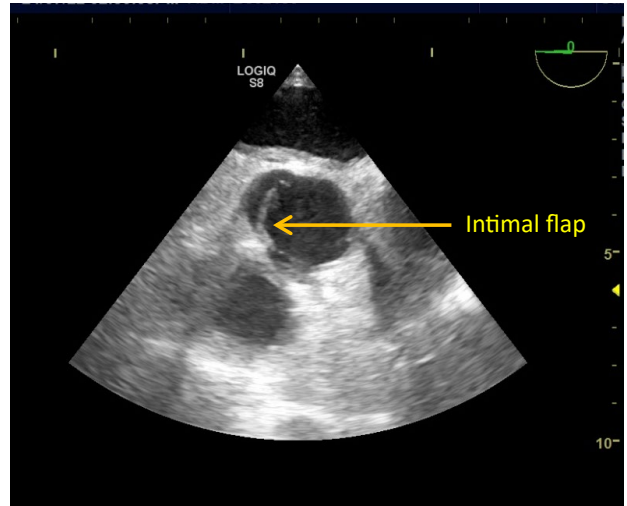


**Figure 1:** Colour discolouration of patient below umbilical level

The transthoracic echocardiogram (TTE) showed global hypokinesia and normal diameters of the aortic root and descending aorta. The transoesophageal echocardiogram (TOE) showed the presence of an intimal flap at the ascending aorta (Figure 2 and 3).



**Figure 2:** Intimal flap seen originating from sinotubular junction (transoesophageal view)



**Figure 3:** Intimal flap seen at descending aortic short axis view (transoesophageal view)

The patient was intubated due to worsening metabolic acidosis and was supported on triple inotropes. However, the patient’s clinical condition did not improve and went into decline, eventually leading to his death. Table 1 shows the investigation results.

**Table 1:** Progress of investigation results

Investigation	Result (23/07/2022)	Result (24/07/2022)
White count	3.5 x 10 <sup>9</sup> /L	3.1 x 10 <sup>9</sup> /L
Haemoglobin	17.0 g/dl	17.8 g/dl
Platelet	92 x 10 <sup>9</sup> /L	100 x 10 <sup>9</sup> /L
Chest X-ray	No widened mediastinum	-
pH	7.229	6.856
Po2	94.1 mmHG	224 mmHG
Pco2	24.7 mmHG	379 mmHG
Hco3	15.5 mmol/L	7.6 mmol/L
Lactate	8.4 mmol/L	12 mmol/L
sO2	93.4%	98.5%
ECG	Sinus tachycardia	-
Urea	16.7 mmol/L	21.4 mmol/L
Na	131 mmol/L	130 mmol/L
K	3.5 mmol/L	6.3 mmol/L
Creatinine	237 umol/L	396 umol/L
CK	10155 IU/L	34490 IU/L

## Discussion

Acute aortic dissection is a rare, life-threatening condition of the aorta and is associated with significant morbidity and mortality rates. Acute type A aortic dissection (ATAAD), which affects the ascending aorta, is the most fatal dissection. Patients typically pass away from dissection-related complications, such as aortic rupture, pericardial tamponade, aortic regurgitation, end-organ malperfusion, or acute heart failure, unless early surgical repair is carried out (2).

Aortic dissection can be diagnosed using different modalities, such as ultrasound and CT scans. However, during our initial assessment, the TTE was unable to visualise the presence of flap in this patient. With a sensitivity of 78-90% and a specificity of 80-96% for type A dissection, TTE has been deemed insufficient for the diagnosis of acute aortic dissection (3). As an alternative, TOE can be utilised, considering its ability to provide instantaneous anatomical and functional real-time visualisations of the heart and aorta, especially in suspected cases of aortic dissection with negative TTE findings. TOE is more favourable as the primary modality in patients with hemodynamic instability. TOE has a sensitivity of 86-100% and specificity of 90-100% in detecting ascending aortic dissection (3). In comparison, CT has a sensitivity of 87-94% and a specificity of 92-100% (4) and would be apt in hemodynamically stable patients, as it can offer more information and is used as the gold standard.

The link between the ATAAD and the emergence of lower extremity malperfusion was demonstrated in a study by Norton et al. (5). Malperfusion is characterised by insufficient blood flow that results in tissue necrosis, motor and sensory dysfunction, increased creatine kinase (CK) and lactate levels, and metabolic acidosis. This was observed in our patient, who initially presented with bilateral lower limb weakness. Further damage to skeletal muscle cells (leading to the release of toxic intracellular material into the blood circulation) resulted in rhabdomyolysis. The classic presentation of this condition is muscle pain, weakness, dark tea-coloured urine (pigmenturia), and a marked elevation of serum CK five to ten times above the upper limit of normal serum levels. In this study, the lower extremity malperfusion group showed a higher proportion of acute renal failure with renal and spinal cord malperfusion. Lactate was one of the strongest clinical predictors of this condition. This was also observed in our patient, who had a rising lactate trend, increased CK, and deteriorating renal function which led to metabolic acidosis. There are few cases reported mentioning the development of rhabdomyolysis in post-operation of aortic repair (6), which differs from our patient that developed it due to the malperfusion condition.

## Conclusion

A high index of clinical suspicion and a thorough physical examination are crucial in aiding physicians in identifying catastrophic sequelae of aortic dissection. Lower limb

presentation (bilateral lower limb weakness) with elevated CK and lactate levels may give a clue to this life-threatening condition. Considering the high mortality index of aortic dissection, prompt intervention is crucial. Incorporation of bedside POCUS and TOE could help in the early recognition and fast management process, thus ensuring the best and most appropriate treatment to the patient in a timely manner.

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## Competing interests

The authors declare that they have no competing interest.

## Informed Consent

As this case report was written retrospectively and the patient involved did not survive, a verbal informed consent has been obtained from next of kin before writing this case report.

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