Type A aortic dissections: challenges of atypical presentation in remote New Zealand

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Clinical vignette
SM, a 62 year-old male of Māori descent, was seen by ambulance for right hemiparesis with no significant medical history. At the scene, he deteriorated into ventricular fibrillation, requiring cardiopulmonary resuscitation and cardioversion, eventually reverting back into sinus rhythm. He was transferred to the Gisborne Hospital with bag-and-mask ventilation and Glasgow Coma Scale of 3.

He was intubated on arrival, maintaining a systolic blood pressure of 80. Investigations showed evidence of coronary (Troponin 45, ST elevation in leads III, aVF with reciprocal changes) and end-organ (eGFR 60, Lactate 2.4, pH 7.24) malperfusion. A widened mediastinum on chest x-ray instigated computed tomography (CT) scans, demonstrating type A aortic dissection (TAAD) extending from the aortic root, across the aortic arch and down the aorta into external iliac arteries. Poor flow was noted in right subclavian, vertebral and common carotid with a right renal artery occlusion. The CT brain was normal. He was accepted and transferred to Waikato District Health Board (WDHB).

On arrival to WDHB, his cardiac (Troponin 7,982, dynamic ST changes), renal (eGFR 37) and neurologic (non-responsive pupils) status deteriorated. The aortic team was convened; at our centre, this is a multidisciplinary meeting of the cardiothoracic and vascular surgical teams, interventional radiology, intensive care unit and anaesthetic department. A decision for repeat CT imaging for neurological prognostication and assessment of coronary ostia was made, demonstrating a large acute right parietal lobe infarct. Given poor neurological prognosis and gross end-organ malperfusion, there was a consensus for palliation after discussion with the family.

Discussion
This case highlights the challenges of emergency management of TAAD in New Zealand. TAADs are time-critical with an immediate mortality rate of 40%, rising 1–2% per hour after onset of symptoms, and a 48-hour mortality rate of up to 70%.1–4 Tertiary referral centres in New Zealand typically serve large geographical areas; WDHB, for example, serves a region comprising of approximately 900,000 (20% of New Zealand population) people across five district health boards. This represents a logistic challenge, as successful management is predicated on prompt diagnosis and awareness by first-point clinicians and excellent portals of communication with WDHB. Transfer times can be exacerbated by difficult geographical terrain, tortuous road ambulance access and tough air transfer conditions.

There may also be cultural impediments to seeking medical attention. In WDHB’s population, 24–40% of the population is of Māori descent, representing approximately 216,000 people or 34% of the Māori Population in New Zealand. There is evidence that the Māori population have a higher predisposition towards TAADs, presenting at a younger age with higher morbidity.1,6 This is compounded by the possibility of atypical presenting symptoms, with the iRAD registry showing that neurological (17%) and syncopal (9%) symptoms are common,7 albeit unfounded in the New Zealand population.
Therefore first-point of care clinicians (eg, paramedics, emergency physicians or general practitioners) must be aware of idiosyncrasies of TAAD presentation in New Zealand, and have it as a potential diagnosis for any chest pain or atypical neurological symptoms, and involve the tertiary referral centres as soon possible. The urgent access of radiological imaging through a picture archiving and communication system (PACS) is crucial; there is also scope for a centralised form of medical imaging that can reduce the time to transfer images. A multi-disciplinary aortic team (described above), which is the standard of practice at our centre, is vital: in this case, the concurrent interventional radiology, anaesthetic and intensive care assessment of neurological and end-organ prognosis while the surgical teams were planning operative intervention allowed a timely decision for palliation, avoiding what would have been a futile operative intervention if the patient had been accepted straight for theatre from Gisborne. Trends of TAAD in the Māori population warrant further investigation into the pathophysiology of why this population has a higher incidence and lower survival, and the factors which are impediments to treatment.

**Competing interests:**
Nil.

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