A 34-year-old previously healthy lady presented to the Emergency Department with persistent vomiting and diarrhoea for 2 days. She also reported a low-grade fever, central chest pain with a pain score of 4/10 and palpitations just prior to presentation. No orthopnoea, paroxysmal nocturnal dyspnoea or reduced effort tolerance were reported. On clinical evaluation, she was somnolent, comfortable on room air and able to converse in full sentences. She was tachycardic at a rate of 160 bpm, hypotensive at 100/68 mmHg and afebrile at 37.2°C. She was found to have profuse sweating, cold peripheries and mild respiratory distress. Chest auscultation revealed bibasal inspiratory fine crepitations and regular S1 S2 heart sounds with no murmurs. Figure 1 shows her ECG tracing. Biochemically, she was hyponatraemic (129 mmol/L) and had markedly elevated creatine kinase with a CK-MB index of 5.7%. Plasma potassium, magnesium and calcium were within reference ranges.

Figure 1 Broad complex tachycardia on 12-lead electrocardiogram.
**Question 1:** What is the electrocardiogram (ECG) finding?

A. Atrial fibrillation with bundle branch block

B. Fascicular ventricular tachycardia

C. Left bundle branch block

D. Supraventricular tachycardia with aberrancy

E. Ventricular fibrillation
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Question 1: B

Discussion

ECG shows monomorphic ventricular tachycardia with a narrower QRS complex (100-140 ms) and shorter RS interval (60-80 ms) than the usual forms of VT. There is atrioventricular dissociation.

Shortly after evaluation in ED, the patient rapidly deteriorated and succumbed following failed attempts at resuscitation. The patient’s thyroid function test which returned after her demise were in keeping with hyperthyroidism and a Burch Wartofsky score calculated post-mortem was highly suggestive of thyroid storm.

Thyroid storm is a rare endocrine emergency that carries a high mortality rate of 10-17%.[1] Tachyarrhythmia is a common presentation of hyperthyroidism and is included in both Burch Wartofsky and Akamizu diagnostic criteria for thyroid storm. It is usually supraventricular in origin and is found in more than ¾ of patients with thyroid storm. [1, 2] Ventricular arrhythmias are uncommon and are usually found in patients with an underlying cardiac disease.[3] The mechanism of ventricular arrhythmias in thyroid storm is unclear although myocardial excitability directly caused by thyroid hormones and possible autoimmune myocarditis have been postulated.[3, 4] In this case, ventricular arrhythmia in the absence of structural heart disease had masked the diagnosis of thyroid storm. This illustrates the importance of considering rare presentations and not limit oneself to common presentations alone when diagnosing diseases as dire as thyroid storm.

A large Japanese study showed that, although cardiovascular disease is the commonest co-morbidity and that cardiopulmonary failure is the main mechanism of death, cardiac manifestations/comorbidities are not significantly associated with mortality in thyroid storm. Rather, old age (>60 years), central neurological dysfunction, delayed treatment with anti-thyroid drugs and beta blockade (as was the case here), and the need for mechanical ventilation strongly predict mortality.[5]

Learning Points

• Correct diagnosis and immediate management is crucial in managing life-threatening ventricular tachyarrhythmia.

• Thyroid storm is an endocrine emergency which has good prognosis if treatment is started early.
Conflict of Interest

Authors declare none.

REFERENCES


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