Hemodynamic measurements for evaluating vasovagal syncope in the emergency department
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Introduction
Syncope accounts for 1.0 to 1.5% of emergency department (ED) visits and up to 6% of hospital admissions.

Objectives
To assess the value of non-invasive hemodynamic measurements in the diagnosis of vasovagal syncope

Methodology
A case study was performed, supported by literature review of the topic. A 53-year-old Chinese woman was brought to the ED by ambulance after a near-syncope episode while doing morning exercises. Blood pressure recorded in the ambulance was low – 98/52, 85/48, and 90/47 mm Hg; with a slow heart rate of 52, 56 and 56 beats/min from three consecutive measurements. On arrival to the ED, her blood pressure was 89/61 mm Hg, heart rate 66 beats/min, respiratory rate 16 breaths/min, and oxygen saturation 99% on room air. Hemodynamic measurements were obtained using a non-invasive ultrasonic cardiac output monitor (USCOM, Uscom Ltd, Australia).

Result
The hemodynamic measurements at presentation, with reference ranges in brackets, were: Stroke volume 68 (63-81) ml; Stroke volume index 37 (36-51) ml/m2, cardiac output (l/min) 4.2 (4.2 – 5.9), cardiac index (l/min/m2) 2.3 (2.4-3.7), systemic vascular resistance (d.m.cm-5) 988 (1084 – 1587), systemic vascular resistance index (d.m.cm-5 m2) 1793 (1712 – 2766). The data in this clinical context were supportive of the diagnosis of vasovagal syncope, with cardiac output at lower limit of normal, and
systemic vascular resistance reduced. A bolus dose of intravenous atropine, 0.6 mg, was then given together with a normal saline 500ml fluid bolus. Five minutes later, blood pressure and heart rate returned to normal at 111/71 mm Hg and 86 beats/min respectively. This allowed the patient to be transported out of the ED high dependency unit and eventually discharged from the ED. Conclusion: Hemodynamic measurements may be used to support the diagnosis of vasovagal syncope and are useful in the risk stratification of ED patients with syncope or near-syncope.