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Electrographic Osborn wave in severe hypercalcaemia

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A 62-year-old woman was referred to our emergency room for generalized weakness, weight loss, and recent change in her mental status over the past week. On arrival, the patient was vitally stable, with a body temperature of 37.2°C and had a score of 10 on the Glasgow Coma Scale; however, nor her or her relatives could recall her pertinent past medical history. On initial investigation, she was found to have a serum creatinine of 105 µmol/L, serum potassium of 4.3 mmol/L, and normal serum cardiac biomarkers. However, serum calcium was 3.55 mmol/L (reference 2.1–2.6 mmol/L), serum phosphate was 0.71 mmol/L (reference 1.1–1.9 mmol/L), and serum parathyroid hormone level was elevated to 525 pg/mL (reference 10–65 pg/mL). A routine electrocardiogram exhibited 0.1 mV positive deflections following the QRS complex in lead II consistent with Osborn waves, or J-waves (*Figures 1* and *2*).

Osborn, initially described Osborn waves, or J-waves, as the 'current of injury' in 1953 as a response to hypothermia in dogs and noted that the amplitude of the J-wave was inversely related to body tempreature.[1] Since its description it has been associated with several other conditions, even at normothermia. The differential for 'normothermic Osborn waves' has evolved over the past several decades and has come to include entities such as benign early repolarization, severe hypercalcaemia, myocardial injury following cardiopulmonary resuscitation, illicit drug overdose, channelopathies, and with subarachnoid haemorrhage.[2,3]

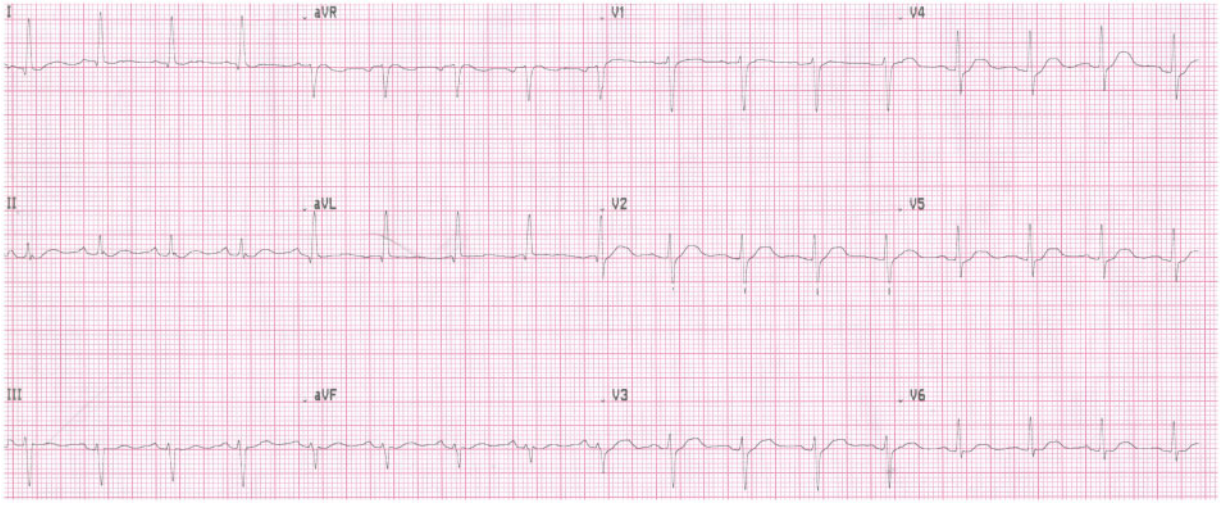

Figure 1 Routine 12-lead electrocardiogram.

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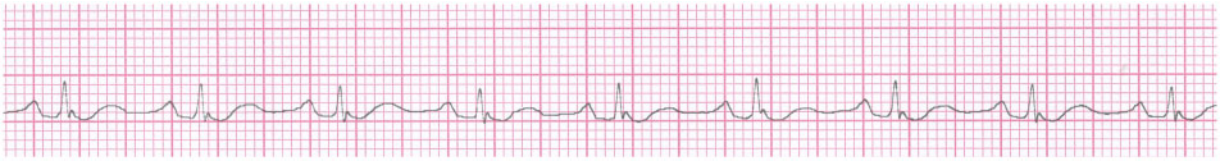

Figure 2 Osborn waves (J-waves) of 0.1 mV amplitude in lead II.

Our patient was immediately treated with intravenous fluids, calcitonin, and placed on an infusion of zoledronic acid to reduce serum calcium. On further investigation, the patient was diagnosed with a parathyroid adenoma as part of Multiple Endocrine Neoplasia type 1 (MEN-1) syndrome. Repeat electrocardiogram at follow-up showed disappearance of the J-wave and return back to baseline.

Consent: The author/s confirm that written consent for submission and publication of this case report including image(s) and associated text has been obtained from the patient in line with COPE guidance.

Conflict of interest: none declared.

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