Hypokalaemia re-visited: a case series

HC Chew

Hypokalaemia is a relatively common biochemical abnormality found at the emergency department. Sequential changes in the electrocardiogram occur as the serum potassium is lowered. Correction of hypokalaemia can be life-saving. It is essential for physicians to be able to recognise these changes and initiate prompt replacement when necessary. We present a case series of patients presenting to the emergency department with symptomatic hypokalaemia and discuss the electrocardiographic manifestations and recognition of hypokalaemic changes. (Hong Kong J. Emerg. Med. 2005;12:232-236)

Keywords: Electrocardiography, hypokalaemia

Case 1

A 25-year-old Chinese male presented on 4th July 2004 to the emergency department with generalised weakness and inability to walk. He had no apparent past history of note. His electrocardiogram (ECG) showed evidence of hypokalaemia with ST segment depression seen in leads II, III and aVF as well as flattening of the T waves with appearance of U waves in the anterior leads. The QT interval appeared prolonged as a result of the fusion of T and U waves, best seen in leads V5 and V6 (Figure 1). In addition, the QRS complexes in the anterior leads were widened, measuring 200 msec. This patient’s serum potassium level was 2.5 mmol/L and he was started on intravenous potassium chloride replacement. He was found eventually to have hypokalaemic periodic paralysis and his symptoms resolved once his serum potassium normalised.

Case 2

A 65-year-old Chinese female patient developed generalised weakness for the last two days with inability to walk. She had been having diarrhoea with occasional bouts of vomiting for the last three days. She presented to the emergency department on 20th May 2004. The ECG showed diffuse ST depressions in the precordial leads with U waves causing pseudo-prolongation of the QT interval (Figure 2). Her serum potassium level was 2.9 mmol/L and symptoms resolved after potassium replacement and treatment of her gastroenteritis.