Terminal Arrhythmia due to Hyperkalemia Corrected by Intravenous Calcium Infusion

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Dear Sir,

the ECG changes due to hyperkalemia have been known since the contribution of Merrill et al. [1] in 1950. Hemodialysis can quickly normalize the severe 'sinus wave' arrhythmia that is generally considered a terminal event but it is difficult to document the ECG pattern of transition from the life-threatening arrhythmia to the sinus rhythm.

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We present the ECG strip (recorded on admission to the hospital) of lead II of a patient with severe hyperkalemia (serum K^+ 9.0 mmol/l) due to acute renal failure.

The sinus wave pattern (fig. 1A) lasted about 95 s and disappeared 15 s after the intravenous administration of 50 ml of 10% calcium gluconate (fig. 1B). The sinus rhythm could be restored and maintained only by means of calcium infusion (fig. 1C) for about 1 h. Emergency dialysis was carried out thereafter and hyperkalemia was then corrected but the cardiotoxicity and the danger for patient's life was removed by intravenous calcium infusion [2].

References

- Merrill, J.P.; Levine, H.T.; Somerville, W.; Smith, S., III: Clinical recognition and treatment of acute potassium intoxication. *Ann. intern. Med.* 33:191 (1950).
Surawicz, B.: Relationship between electrocardiogram and electrolytes. *Am. Heart J.* 75:814 (1967).

Fig. 1. ECG (lead II) in hyperkalemia before (A) during (B) and after (C) intravenous calcium infusion.