Evidence Based Case Report: Pseudo-Brugada Pattern May Predict Sudden Cardiac Death in Hyperkalemia

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Introduction: The “pseudo-Brugada” pattern or also known as “Brugada Phenocopy”, is a term used to describe clinical entities that are etiologically distinct from true congenital Brugada syndrome.

Methods: In this report, we described a patient with hyperkalemia who showed the Brugada pattern without any other ECG features of hyperkalemia and how the patient deteriorated.

Result: A 30-year-old female, P4A1 post caesarean section due to HELLP syndrome and impending eclampsia, was consulted to cardiology department with sudden onset of dyspnea, fever, but no chest pain. Past medical history was unremarkable. Family history was negative for sudden cardiac death of cardiac problem. Physical examination showed vitals of blood pressure of 170/100 mmHg, heart rate at 94 times/minute, respiratory rate at 32 times/minute, and SpO2 at 87%. Lung examination findings were rales on both sides consistent with pulmonary edema. Lab data showed initial potassium of 7.1 mEq/L, Hb: 10.2, WBC 29.500/mm3, platelet count 257.000/mm3, LDH 905 U/L, ureum 306 mg/dL, creatinine 9.2 mg/dL, natrium 124 mEq/L, ALT 39 mg/dL, AST 35 mg/dL and troponin T of 255 ng/dL. Her ECG was consistent with type 1 Brugada pattern (figure 1). Her initial ECG when she was first admitted to the ED 5 days before the consult can be seen in figure 2. Bedside echo suggested LVEF of >55% with no regional wall abnormality. After administration of intravenous calcium gluconate, intravenous bolus of D40 and short-acting insulin aspart, 7 hours later, the patient potassium reduced to 6.31 meq/L and repeated ECG was ordered (figure 3) showing diminished Brugada pattern. The patient was scheduled for immediate hemodialysis, but she was experiencing sudden cardiac death in the operating room before catheter double lumen placement. After reviewing some literatures, there were 77 cases reported with Brugada phenocopy pattern as the presenting ECG change, published within 1956 until 2018. On his publication, Littman et.al published that over 10-year period research on his institution, only 9 cases were found by the authors that is fulfilled the criteria of Brugada phenocopy type 1 pattern. This poor patient outcome is actually consistent with what earlier described on a similar study. Littman et al described that patients with hyperkalemic Brugada phenocopy sign had a grave prognosis. His study showed that 5 of the 9 patients died within 48 hours after the ECG pattern recorded. Postema et al. mentioned that in patients who demonstrated Brugada ECG pattern with hyperkalemia, there's increased risk for the occurrence of ventricular tachyarrhythmia/asystole, due to altered excitability of the heart, albeit different pathophysiology from true BrS.

Conclusion: Although transient and reversible, the occurrence of pseudo-Brugada or Brugada phenocopy in hyperkalemic setting may become a predictor of fatality.