# Possible Brugada Phenocopy Induced by Hypokalemia in a Patient with Congenital Hypokalemic Periodic Paralysis

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**Dear Editor,**

We read with great interest the case report by Gazzoni et al[1] regarding a Brugada ECG pattern induced by hypokalemia. This paper is important because it contributes to the growing body of literature describing Brugada Phenocopies (BrP)[2-5].

Briefly, BrP are characterized by ECG patterns that are identical to type-1 or type-2 Brugada ECG patterns despite the absence of true congenital Brugada Syndrome (BrS). BrP are induced by various clinical circumstances including: hypokalemia, hyperkalemia, hypothermia, myocardial ischemia, and pulmonary embolism. We have established six etiological categories of BrP[2-4] along with a systematic approach to diagnose BrP[3] by excluding sodium channel dysfunction in the myocardium. The presented case by Gazzoni et al[1] would possibly qualify under category (i) metabolic conditions; however, further analysis of this case report is required.

Specifically, this is the first report of a possible BrP induced by hypokalemia in association with hypokalemic periodic paralysis (HPP). Patients with HPP are known to have gene mutations resulting in abnormalities of either dihydropyridine-sensitive calcium channels or sodium channels (SCN4A) in *skeletal* muscles. Patients with true congenital BrS have mutations in the *myocardial* sodium channels (SCN5A) and the association in this patient is most intriguing and remains speculative. The type-1 "coved" Brugada ECG pattern observed in this patient could have been induced by the transient serum hypokalemia (which would qualify this as a BrP) or there may be a congenital dysfunction in this patient's sodium channels in both his skeletal muscles (HPP) and myocardium resulting in the ECG abnormalities. Therefore, we recommend to the authors that a myocardial provocative challenge with a sodium channel blocker such as procainamide, ajmaline, or flecainide be performed to rule out myocardial sodium channel dysfunction. In addition, we also suggest that future reports use the established term *Brugada Phenocopy* to provide consistency in the literature and facilitate future research.

We are establishing an international registry database at www.burgadaphenocopy.com and invite Gazzoni et al[1] to submit this case along with future cases to the registry should they satisfy the BrP diagnostic criteria[3]. The goal of this registry is to provide long-term follow-up and insight into the pathophysiology and natural history of patients presenting with BrP.

## Keywords

Brugada Syndrome; Hypokalemia; Hypokalemic Periodic Paralysis.

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