Malignant Arrhythmia secondary to Early Repolarization in a 27 year-old male, the J wave Syndrome: A Case Report

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**Introduction**: The J wave is a deflection noted after the QRS complex on ECG. Its manifestation as an early repolarization pattern has emerged as a pro arrhythmic state rather than a benign abnormality and is being hypothesized and recognized as a cause of idiopathic ventricular fibrillation leading to sudden cardiac death at 0.9% worldwide. Current evidence associating early repolarization with the development of malignant arrhythmia is limited.

**Methods**: Highlighted is a 27 year-old male with no known comorbidity, an occasional smoker, alcoholic beverage drinker and no history of illicit drug use presenting with intermittent palpitations for a year presenting with a few hour history of severe epigastric pain and loss of consciousness. Ventricular fibrillation was later noted and defibrillation was done. The patient reverted to sinus rhythm and was confined. An acute coronary syndrome was entertained and medications were started. Electrolytes, acute phase reactants, and thyroid hormones were determined and were all normal. Troponin was elevated. A 12 lead ECG showed sinus rhythm with up slopping of the J wave of at least 2mm in the inferolateral leads. 2D echocardiography, cardiac MRI, and coronary angiogram were all unremarkable. A diagnosis of J wave syndrome was made. Cilostazol 200mg/tablet per day was started and a single chamber implantable cardioverter defibrillator was placed for secondary prevention. No recurrence of the arrhythmia was noted and the patient was discharged.

**Result**: Early repolarization pattern is an incidental finding in normal individuals, especially in males, athletes and African Americans. It has been occasionally noted to emerge just before the onset of ventricular fibrillation. Early studies lead to the current criteria for evaluating the J wave as benign or malignant. These criteria include the J point elevation, height of the J wave, slope of ST segment (up sloping, horizontal or down sloping), and number of contiguous ECG leads involved. In this case report, accounting the history, the normal results of both non invasive and invasive tests, coupled with the characteristic ECG changes, type 2 early repolarization was established and managed accordingly. Subsequent device interrogation on follow-up showed no arrhythmia recurrence.

**Conclusion**: The data on the prevalence of early repolarization as a prelude to the occurrence of ventricular arrhythmias in healthy patients is growing. Correlation with certain genes and specific phenotypes are still being discovered and its causation for sudden cardiac death is yet to be established. Due to this rarity, facts are insufficient to provide adequate evidence to create guidelines, support screening methods, and improve current treatment strategies.