Augmentation of J Wave Following Ventricular Pause in “Benign” Early Repolarization

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A 24-year-old man was referred to our hospital 3 years previously for counseling regarding abnormalities of his electrocardiogram (ECG). He had no history of syncope or other manifestation of cardiovascular disorder. The 12-lead ECG at rest showed sinus rhythm and type 1, 2nd degree atrioventricular block with 3 : 2 alternating with 4 : 3 ventricular responses (Picture 1). In the precordial leads, prominent J waves were present with the 2nd and 5th QRS, after the longest ventricular cycles due to A V block, and were less prominent with the 3rd, 4th and 6th QRS of the shorter ventricular cycles. The patient has remained free from symptomatic arrhythmia in the 3 years since that examination.

Early repolarization is characterized by the presence of distinct J waves, J point and ST segment elevation, most prominently visible in the precordial leads. The ionic, cellular mechanism responsible for J waves is a prominent transient outward current (Ito)-mediated action potential notch in the ventricular epicardium, which produces a transmural voltage gradient in early diastole, accentuated by bradycardia. Aizawa et al observed a similar phenomenon in a patient with idiopathic ventricular fibrillation (1). This ECG is an example of J waves augmented by pauses in a patient presenting with “benign” early repolarization.

Reference