CASE REPORT

Lateral “Coved” ST-Segment Elevation: Exceptional but Malignant Electrocardiographic Sign in a Patient with Brugada Syndrome

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CASE REPORT

We report a case of a healthy 32-year-old male, with no family history of sudden cardiac death, who was admitted because of syncope and palpitations. A surface 12-lead ECG showed typical, “coved” type ST-segment elevation in the right precordial leads V1–V2. A 12-lead Holter monitoring revealed spontaneous, dynamic “coved” ST-segment changes in leads I, aVL, and V1–V3 (Fig. 1). Echocardiography excluded structural heart disease. A stress-test did not induce ischemia or arrhythmias. An electrophysiology study did not induce arrhythmias. An implantable cardioverter-defibrillator (ICD) was implanted due to syncope and spontaneous type 1 Brugada ECG pattern. Three weeks later, the patient presented an electrical storm (6 appropriate ICD therapies –5 ATP for VT and 1 shock for VF). One month later, an episode of VF was successfully treated by the ICD. Quinidine therapy at 600 mg daily was started. No arrhythmia recurrences were observed in a follow-up period of 6 months.

DISCUSSION

The typical ECG pattern in patients with Brugada syndrome (BrS) includes “coved” ST-segment elevation (≥2 mm J point elevation) in at least one of the right precordial leads.1 However, sporadic cases have been reported in which the “coved-type” Brugada ECG pattern was also observed in the inferior or lateral ECG leads.2–5 Sarkozy et al. reported in a large cohort of patients with BrS (280 patients) that the “coved” Brugada pattern did not occur spontaneously in the inferior or lateral leads but rather after challenging with sodium blockers.6 These data suggest that the presence of spontaneous “coved” ST elevation in the inferior–lateral leads is an exceptional finding in BrS. In contrast, class I antiarrhythmic drugs administration provoked “coved” Brugada pattern in the inferior or lateral leads in 4.6% of their study population. The localization of the “coved” Brugada pattern was the lateral leads in only one patient, corresponding to 0.4% of their database.
This finding suggests that "coved" Brugada pattern in the lateral leads is a very rare variant. In turn, "coved" Brugada pattern was provoked in the inferior leads in 4.3%.8 There have been also two case reports, by Bonakdar et al. and by van den Berg et al., on patients with Brugada syndrome who had alternating (daily variations) ST-segment elevation in the right precordial leads and the high lateral leads (I and aVL).4,7 Letsas et al. reported a patient with Brugada "saddle-back" or type 2 Brugada pattern in the right precordial leads and early repolarization pattern (spontaneous; with J wave and ST segment elevation but not "coved" type pattern) in the high lateral leads [I, aVL].8

Here we describe a unique and interesting ECG variant of BrS with simultaneous and spontaneous combination of the typical "coved" type ST-segment elevation in the right precordial and high lateral leads. This rare electrocardiographic variant seems to be a malignant form of BrS (history of frequent syncope and electrical storm). The presented case has also other previously described ECG markers of risk:

1. aVR sign: prominent final positive "aVR sign" ($R \geq 0.3\text{ mV}$ or $3\text{ mm}$ or $R/q$ ratio $\geq 0.75$).9
2. Fragmented QRS (fQRS)—seen transiently in lead V2 (Fig. 1D).
3. Malignant early repolarization pattern in lateral leads resembling the Greek letter lambda (Fig. 1A).10
4. Parietal block (Fig. 1E).

**REFERENCES**


