Structured abstract

Aims) To establish the indication for programmed ventricular stimulation (PVS) for asymptomatic patients with Brugada syndrome (BrS), we evaluated the prognostic significance of PVS based on abnormal ECG markers.

Methods) One-hundred-twenty-five asymptomatic patients with BrS were included. We performed PVS at two sites of the right ventricle with up to 3 extrastimuli (2 pacing cycle lengths and minimum coupling interval (MCI) of 180 ms). We followed the patients for 133 months and evaluated ventricular fibrillation (VF) events. Fragmented QRS (fQRS) and Tpeak-Tend (Tpe) interval were evaluated as ECG markers for identifying high-risk patients.

Results) fQRS and long Tpe interval (≥100 ms) were observed in 66 and 37 patients, respectively. VF was induced by PVS in 60 patients. During follow-up, 10 patients experienced VF events. fQRS, long Tpe interval and PVS-induced VF with an MCI of 180 ms or up to 2 extrastimuli were associated with future VF events (fQRS: $p=0.015$, Tpe≥100 ms: $p=0.038$, VF induction: $p<0.001$). However, PVS-induced VF with an MCI of 200 ms was less specific ($p=0.049$). The frequencies of ventricular

tachyarrhythmia events during follow-up were 0%/year with no ECG markers and 0.1%/year with no VF induction. The existence of 2 ECG factors with induced VF was strongly associated with future VF events (event rate: 4.4%/year, $p < 0.001$), and the existence of 1 ECG factor with induced VF was also associated (event rate: 1.3%/year, $p=0.011$).

Conclusion) We propose PVS with a strict protocol for asymptomatic patients with fQRS and/or long Tpe interval to identify high-risk patients.

Keywords: Brugada syndrome; programed ventricular stimulation; ventricular fibrillation; fragmented QRS; Tpeak-Tend interval.