

## **The Role of High Precordial Leads for the Diagnosis and Risk Stratification of Brugada Syndrome**

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**Introduction:** Type 1 Brugada ECG is essential for the diagnosis of Brugada syndrome (BS). The objective of this study was to examine the role of high precordial leads in ECG or 12 channel holter ECG recording in the diagnosis and risk stratification of BS.

**Methods:** Three hundred and sixty patients (age  $38 \pm 18$ , 64% males) with clinical diagnosis (57%) or suspicion of BS and positive genetic analysis for SCN5A mutation were included. ECG and 12 channel holter ECG were analyzed for a type 1 pattern in either the standard or high leads (third intercostal space). The risk for severe cardiac events was assessed during the follow up.

**Results:** Rates of detection of BS increased from 3% to 17% ( $p = 0.004$ ), and to 13% ( $p=0.002$ ), when 12 channel holter and high lead ECG were added respectively to standard ECG. Addition of 12 channel lead holter with high leads increased the detection rate to 32%. During the follow up of  $7.1 \pm 3$  years, 25 patients (7%) had severe events (19 cardiac arrest, 3 died and 3 had appropriate ICD discharge). Thirty cases with type 1 pattern observed only in high leads (ECG or holter), had the same clinical characteristics and the same total and severe cardiac events rate as patients diagnosed with standard leads. In Cox regression analysis type 1 Brugada pattern in standard ECG (95%CI 1-5.8, HR 2.3,  $p= 0.05$ ), type 1 in high lead ECG (95%CI 1.5-23.5, HR 6,  $p= 0.009$ ) and type 1 pattern in high leads ECG or holter (95%CI 1.8-42, HR 8.9,  $p= 0.006$ ) were risk factors for severe cardiac events during the follow up.

**Conclusion:** ECG with high leads and 12 channel leads holter with standard and high leads are useful and simple tools to diagnose BS. Spontaneous type 1 pattern in standard leads as in high leads is a risk factors for severe cardiac events in BS.