Introduction: Brugada syndrome (BrS) is a cardiac ion channelopathy with characteristic electrocardiographic patterns, predisposing affected individuals to higher risks of sudden cardiac death (SCD). Implantable cardioverter-defibrillator (ICD) is used for primary or secondary prevention in BrS, but its use remains controversial amongst low-risk asymptomatic patients. The present study aims to examine indicators for ICD implantation amongst BrS patients with different disease manifestation.

Methods: This study included a registry of BrS patients who received ICD between 1997 to 2019. The cohort was divided into three categories based on presentations before ICD implantation: asymptomatic, syncope, ventricular tachycardia/ventricular fibrillation (VT/VF). The median follow-up duration was 95 [0-265] months. Univariate and multivariate Cox-regression analyses were performed to identify independent predictors of appropriate and inappropriate shock delivery.

Result: A total of 153 consecutive patients were included. Appropriate shocks were delivered in 37 patients (24.2%) whereas inappropriate shocks were delivered in 30 patients (19.6%). Complications occurred in 39 patients (25.5%). No independent predictors of appropriate or inappropriate shock delivery were found in multivariate Cox regression analysis.

Conclusion: ICD therapy is effective for primary and secondary prevention of SCD in BrS. Whilst appropriate shocks occur more frequently in BrS patients presenting with VT/VF, they also occur in asymptomatic patients. Further research in risk stratification can help to improve patient prognosis whilst avoid unnecessary ICD implantation.