

# Inappropriate shock in Brugada syndrome: incidence and predictors in patients with a subcutaneous implantable cardiac defibrillator

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## Abstract

**Abstract Background:** Subcutaneous implantable cardioverter defibrillators (S-ICDs) avoid complications secondary to transvenous leads, but inappropriate shocks (ISs) are frequent. Furthermore, IS data from patients with Brugada syndrome (BrS) with an S-ICD are scarce. **Objective:** We aimed to establish the incidence, mechanisms, and predictors of S-ICD in this population. **Methods:** We analyzed the clinical and electrocardiographic characteristics, automated screening test data, device programming, and IS occurrence in adult patients with BrS with an S-ICD. **Results:** Thirty-nine patients were enrolled (69% male, mean age at diagnosis  $46\pm 13$  years, mean age at implantation  $48\pm 13$  years). During a mean follow-up of  $26\pm 21$  months, 18% patients experienced IS. Patients with IS were younger at the time of diagnosis ( $36\pm 8$  versus  $48\pm 13$  years,  $p=0.018$ ) and S-ICD implantation ( $38\pm 9$  versus  $50\pm 23$  years,  $p=0.019$ ) and presented with spontaneous type 1 Brugada ECG pattern more frequently at diagnosis or during follow-up (71% versus 25%,  $p=0.018$ ). During automated screening tests, patients with IS showed lower QRS voltage in the primary vector in the supine position ( $0.58\pm 0.26$  versus  $1.10\pm 0.35$  mV,  $p=0.011$ ) and lower defibrillator automated screening score (DASS) in the primary vector in the supine ( $123\pm 165$  versus  $554\pm 390$  mV,  $p=0.005$ ) and standing ( $162\pm 179$  versus  $486\pm 388$  mV,  $p=0.038$ ) positions. Age at diagnosis was the only independent predictor of IS (hazard ratio=0.873, 95% confidence interval: 0.767-0.992,  $p=0.037$ ). **Conclusion:** IS was a frequent complication in patients with BrS with an S-ICD. Younger age was independently associated with IS. A more thorough screening process might help prevent IS in this population.

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