

Territory Wide Study Comparing the Ventricular Tachyarrhythmia Risk in Paediatric/Young and Adult Brugada Syndrome

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Introduction: Brugada syndrome (BrS) is an ion channelopathy that predisposes affected individuals to an increased risk of sudden cardiac death without overt structural abnormalities. This study aims to identify the differences in clinical and electrocardiographic (ECG) presentation between paediatric/young and adult BrS patients.

Method: The present study is a territory-wide retrospective cohort study consists of consecutive BrS patients presenting to centers under the Hong Kong Hospital Authority between January 1st, 1997 to June 20th, 2020. Patients at or below 25 years old were categorized into the paediatric/young subgroup, with the remainder of patients categorized into the adult subgroup. Spontaneous ventricular tachycardia/ventricular fibrillation (VT/VF) was the primary outcome of the present study.

Results: The cohort included a total of 545 patients (mean age of initial presentation =50±16 years; female= 7.3%; mean follow-up period= 83±55 months). It was divided into adult (n=505) and paediatric/young subgroups (n=45). The mean annual VT/VF incidence rate were 17 and 25 cases per 1000 patient-year, respectively. Under multivariate Cox regression analysis, an initially asymptomatic presentation (HR=0.26, 95% CI=[0.07, 0.94], p=0.040) and the initial presentation of type 1 Brugada ECG pattern (hazard ratio [HR]=1.80, 95% confidence interval [CI]=[1.02, 3.15], p=0.041), in addition to increased P-wave axis (HR=0.98, 95% CI=[0.96, 1.00], p=0.036) were significant predictors of VT/VF for the adult subgroup. On the other hand, only the initial presentation of VT/VF (HR=29.30, 95% CI= [1.75, 492.00], p=0.019) was the only predictor found in the paediatric/young subgroup.

Conclusion: BrS manifests differently in both clinical and electrocardiographic aspects between the paediatric/young and adult patient subgroups. Therefore, an individualized risk stratification and management approach should be adapted for young patients.