Arrhythmias and Clinical EP

ASSESSMENT OF EUROPEAN SOCIETY OF CARDIOLOGY SUDDEN CARDIAC DEATH RISK MODEL FOR HYPERTROPHIC CARDIOMYOPATHY

Poster Contributions
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Background: Risk stratification for sudden death risk is now an essential component of disease management in hypertrophic cardiomyopathy (HCM), given the proven effectiveness of the implantable cardioverter-defibrillator (ICD) in terminating lethal ventricular tachyarrhythmias and preventing sudden death (SD). While highly useful in identifying high-risk patients, the stratification algorithm currently in use remains incomplete and novel strategies are encouraged.

Methods: . We evaluated the recently-promoted European Society of Cardiology (ESC) risk assessment strategy which employs sophisticated mathematical/statistical modeling using 7 disease variables to predict SD risk over 5 years. We calculated the ESC SD risk score and measured it against primary prevention ICD outcome in patients previously evaluated at 2 HCM referral centers.

Results: Of 372 study patients, 40 (10%) had appropriate ICD interventions at 43 ± 14 years of age, and 332 did not over a follow-up period of 8.8 ± 6.0 years. The calculated ESC risk score and %/year risk for SD over 5 years did not differ between patients with or without device interventions (4.7 ± 2.5 vs. 4.1 ± 2.8 and 0.94%/year vs. 0.82%/year; P = 0.18). Most patients who experienced appropriate ICD interventions for VT/VF (n = 22; 55%) paradoxically had low SD risk scores of <4% /year over 5 years, judged to not justify ICD recommendations by the ESC model. Just 11 or 27% of those patients with appropriate ICD interventions had a high-risk ESC score (>6% risk/year over 5 years), considered a direct ICD indication, although 75% of those patients also met standard criteria for device implantation. Alternatively, most patients (205; 61%) without appropriate shocks had low risk scores (<4%/year), indicating a recommendation against ICD implant.

Conclusion: In this large HCM cohort implanted with ICDs, ESC mathematical model and stratification strategy did not reliably predict SD risk, and the majority of patients who experienced appropriate ICD interventions would not have been considered candidates for prophylactic device therapy. Use of this scoring system as a primary risk stratifier would leave many high-risk HCM patients unprotected from arrhythmic SD.