The prevalence and long-term outcomes of extreme right ventricular hypertrophy compared with that of extreme left ventricular hypertrophy in patients with hypertrophic cardiomyopathy

BACKGROUND: Extreme left ventricular hypertrophy (LVH) has been associated with a poor prognosis and risk of sudden cardiac death in hypertrophic cardiomyopathy (HCM). Severe right ventricular hypertrophy (RVH) is rare and whether it also be linked to a poor outcome is unknown. The aim of this study was to investigate the differences of the prevalence and long-term outcomes between patients with extreme RVH and extreme LVH in HCM.

METHODS: A retrospective study of 30 patients with extreme RVH (maximum RV wall thickness >10 mm) and 143 patients with extreme LVH (maximum LV wall thickness ≥ 30 mm) identified in a consecutive cohort consisting of 2320 patients with HCM was performed. Any other diseases capable of producing such right or left hypertrophy were excluded. The prevalence, and natural history of the 2 groups were compared.

RESULTS: The prevalence of extreme RVH was 1.3% and extreme LVH was 6.7% in Chinese HCM patients. Patients with extreme RVH tended to be younger (p=0.02) and more women involved (p=0.01). The 10 years probability of cardiovascular mortality was significantly greater in extreme RVH group (log-rank, P= 0.017) Nevertheless cardiovascular morbidity were similar (p=0.07), among which progressing to heart failure was much more common in extreme RVH (p <0.001). The incidence of atrial fibrillation, myocardial infarction, syncope, embolic stroke, ventricular tachycardia showed no difference between the 2 groups.

CONCLUSIONS: Extreme RVH was quite uncommon in HCM. Its prognosis was even poorer, characterized by progressive clinical deterioration to increased cardiovascular mortality and similar morbidity, compared with extreme LVH. Our results underscore the importance of RV evaluation in HCM and timely recognition of extreme RVH for early consideration of appropriate management strategies.
Kaplan-Meier estimates of the probability of cardiovascular survival (A) and freedom from cardiovascular morbidity (B) in HCM patients with extreme right ventricular hypertrophy and extreme left ventricular hypertrophy.

- A: Survival
  - Patients with LVH
  - Patients with RVH
  - P = 0.0169

- B: Freedom from morbidity
  - Patients with LVH
  - Patients with RVH
  - P = 0.0714

Follow-up duration (years)