Myocardial fibrosis and clinical outcome in apical and non-apical hypertrophic cardiomyopathy

Chun Ting Zhao
Kit Chan
Ming Yen Ng
Qing Shan Lin
Ming Ya Liu
Linda Lam
Kai Hang Yiu
Hung Fat Tse

Introduction: Apical hypertrophic cardiomyopathy (HCM) is common among Asian population. We aim to study the prevalence of apical HCM, the distribution of myocardial fibrosis and the clinical outcome in Chinese HCM patients.

Methods: Consecutive patients who had undergone cardiac magnetic resonance imaging (CMRI) between March 2015 and February 2018 were recruited. Echocardiogram (echo) and CMRI findings were analyzed. Patients were followed up for cardiovascular events and mortality.

Result: Seventy-eight patients with HCM (65 males) and 22 patients with left ventricular hypertrophy not diagnostic of HCM (Non-HCM LVH) (18 males) were recruited. The mean age of HCM patients was 51±11 years. Compared with the non-HCM LVH patients, HCM patients had lower prevalence of hypertension (30% vs 63%; \(p = 0.003\)), and higher LVEF by echo (69±8% vs 59±10%; \(p<0.001\)) and cardiac MRI (62±8.8% vs 51±17%; \(p = 0.001\)). There was no statistically significant difference in age, LAD, IVS thickness, LVOT gradient, SV, LVEDV and LVM adjusted for BSA between the two groups. Late gadolinium enhancement (LGE) and LVOT obstruction (LVOTO) were present in 28% and 3.8% of HCM patients respectively, while no patient in the non-HCM LVH group had LGE or LVOTO. Fifty three percent of HCM patients had apical HCM phenotype. Apical HCM patients had higher prevalence of T wave inversion (90.6% vs 57.7%; \(p = 0.004\)) and lower prevalence of LVOTO (0 out of 41 vs 4 out of 47; \(p = 0.046\)) than non-apical HCM patients. There was no statistically significant difference in LVEDV, LVM, LVOT PG and diastolic dysfunction and LGE (26.8% vs 29.7%; \(p = 0.776\)) between apical and non-apical HCM patients. Among the 22 HCM patients with CMRI evidence of LGE, IVS, apex, inferior/posterior and anterior segments were involved in 11, 9, 6, and 1 patients respectively. Diffuse LGE was present in 5 patients. Non-specific myocardial fibrosis without LGE was present in 2 HCM patients. At mean follow up of 21±7.5 months, only 1 patient with HCM died from urinary bladder cancer. There was no documented sustained ventricular arrhythmia or cardiac death. Atrial fibrillation, atrial flutter, non-sustained ventricular tachycardia, frequent ventricular ectopic beats and syncope were present in 2, 1, 3 and 2, 5 patients respectively.

Conclusion: Our cohort of Chinese HCM patient showed a high prevalence of apical HCM, relatively low prevalence of myocardial fibrosis and a benign cardiovascular outcome compared with the Western population.