Introduction: Hypertrophic cardiomyopathy (HCM) is predisposed to arrhythmias including atrial fibrillation and ventricular tachycardia. Whether HCM patients with atrial fibrillation showed a higher risk of ventricular arrhythmias is still not clear.

Methods: Patients with HCM hospitalized in Sir Run Run Shaw Hospital from January 2015 to December 2017 were consecutively recruited in this study. Every patient underwent body surface electrocardiograph, 12-lead electrocardiogram, collecting blood samples and clinical profiles. The patients were divided into several groups (AF group and non-AF group; VT group and non-VT group). Risk factors for AF or VT in patients with HCM were assessed by multivariate logistic regression analysis.

Result: A total of 136 patients were recruited in this study. Genetic screening using whole exon sequencing in 45 patients. Among the 136 patients, 25.7%(35/136) patients were with AF. Age [(66.3±8.8) years vs (58.5±12.1) years], New York Heart Association class (2.7±0.63 vs 2.2±0.04), left atrial dimension [(47.5±11.0)mm vs (42.0±8.8)mm], total cholesterol [(4.1±0.7)mmol/L vs (4.7±1.1)mmol/L] in the AF group were significantly higher than those in the non-AF group (all P<0.05). Multivariate logistic regression indicates that advanced age (OR=1.16, 95% CI 1.02~1.31, P=0.023), higher NYHA class (OR=46.63, 95% CI 5.4~401.1, P<0.0001) and lower level of total cholesterol (OR=0.23, 95% CI 0.06~0.79, P=0.02) were independent risk factors for AF in patients with HCM. Among them, 11.8%(16/136) were with VT. Risk of sudden death score [(4.9±2.6)% vs (2.4±1.7)%], ratio of man, syncope, complicated with DM, ICD implanted, smoking and non-left ventricular outflow tract obstruction in the VT group were much higher than those in the non-VT group (all P<0.05). Multivariate logistic regression indicates that higher score of sudden death risk (OR=2.19, 95% CI 1.39~3.44, P=0.001), complicated with DM (OR=8.64, 95% CI 1.3~58.8, P=0.027) and non-left ventricular outflow tract obstruction (OR=0.017, 95% CI 0.001~0.418, P=0.013) were independent risk factors for VT in patients with HCM.

Conclusion: Advanced age, higher NYHA class and lower level of total cholesterol are independent risk factors for AF in patients with HCM. For this study, complicated with DM and non-left ventricular outflow tract obstruction are independent risk factors for VT in patients with HCM, but it needs further validation.