The risk of ventricular arrhythmia in HCM patients with atrial fibrillation.

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**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 \[(66.3\pm8.8) \text{ years vs} (58.5\pm12.1) \text{years}\], New York Heart Association class \[(2.7\pm0.63 \text{ vs} 2.2\pm0.04)\], left atrial dimension \[(47.5\pm11.0) \text{mm vs} (42.0\pm8.8) \text{mm}\], total cholesterol \[(4.1\pm0.7) \text{mmol/L vs} 4.7\pm1.1) \text{mmol/L}\] 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 \((OR=1.16, 95\% \text{CI} 1.02\sim1.31, P=0.023)\), higher NYHA class \((OR=46.63, 95\% \text{CI} 5.4\sim401.1, P<0.0001)\) and lower level of total cholesterol \((OR=0.23, 95\% \text{CI} 0.06\sim0.79, P=0.02)\) were independent risk factors for AF in patients with HCM. Among them, 11.8%(16/136) were with VT. Risk of sudden death score \[(4.9\pm2.6)\% vs(2.4\pm1.7)\%\], 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 \((OR=2.19, 95\% \text{CI} 1.39\sim3.44, P=0.001)\), complicated with DM \((OR=8.64, 95\% \text{CI} 1.3\sim58.8, P=0.027)\) and non-left ventricular outflow tract obstruction \((OR=0.017, 95\% \text{CI} 0.001\sim0.418, P=0.013)\) 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.