

1 **Abstract**

2 **Background:** Multiple spikes in the QRS complex [fragmented QRS (fQRS)] on 12-lead  
3 electrocardiography has been associated with ventricular arrhythmic events (VAEs) in  
4 patients with hypertrophic cardiomyopathy (HCM). The aim of this study was to assess the  
5 association between new appearances of fQRS and cardiac events in patients with HCM.

6 **Method and Results:** We retrospectively evaluated the association between baseline fQRS  
7 and cardiac events, namely VAEs, heart failure-related hospitalization and all-cause death in  
8 146 HCM patients (46 patients with fQRS vs. 100 without fQRS). The median follow-up was  
9 5.3 years. Cardiac events occurred in 29 patients with baseline fQRS and 32 patients without  
10 baseline fQRS (63% vs. 32%,  $P < 0.001$ ). VAEs occurred in a significantly larger percentage  
11 of patients with baseline fQRS than in those without fQRS (54% vs. 23%,  $P < 0.001$ ). In the  
12 100 patients without baseline fQRS, 33 patients had new appearance of fQRS during 4.6-  
13 years of follow-up (33 patients with appearance of fQRS vs. 67 without). VAEs occurred  
14 more frequently in the 33 patients with appearance of fQRS than in those without (VAEs 42%  
15 vs. 13%,  $P = 0.001$ ). Multivariable analysis showed that new appearance of fQRS that is  
16 documented before VAEs was associated with VAEs (HR: 4.29, 95% CI: 1.81–10.2;  
17  $P = 0.001$ ).

18 **Conclusions:** New appearance of fQRS was associated with an increased risk of VAEs in  
19 HCM patients.

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21 **Keywords:** Hypertrophic cardiomyopathy, Ventricular arrhythmia, Fragmented QRS,  
22 Electrocardiography, Hospitalization

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