Sympathetic Activity Index Should Be Kept in Mind When Assessing Autonomic Tonus

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To the Editor:

We read with great interest the article by Hwang et al.¹⁾ who presented important data for the clinical characteristics and features of idiopathic ventricular premature complexes (VPC). In their well-written manuscript, the authors reported that VPC frequency was higher in women than in men and the main electrocardiography morphology of VPC was the left bundle branch block pattern, inferior axis and late precordial R-wave transition. These findings are very helpful in demonstrating that non-western communities are consistent with the traditional knowledge in terms of demographic and clinical VPC features. However, we would like to contribute a different view to the study.

It is known that some factors, such as anxiety, increased sympathetic activation, tobacco or alcohol usage, anemia and thyroid function disorders etc., may affect the VPC frequency.^{2,3)} When assessing the VPC frequency and its outcomes, multiple factors should be taken into consideration. It would have been better if the authors had mentioned about thyroid and complete blood count results. But the main point that we want to emphasize is the sympathetic activity. Although sympathetic activity has an effect on VPC frequency (especially in women), it is very difficult to determine this activity in retrospective studies. However, Aparci et al. suggested a new scoring system, "Sympathetic activity

index", which is based on scores of heart rate, body mass index and systemic blood pressure.⁴⁾ This index seems to be useful in grading sympathetic drive. Also, the already mentioned parameters are appropriate for retrospective studies and adding this score would make the study more precise.

References

1. Hwang JK, Park SJ, On YK, Kim JS, Park KM. Clinical characteristics and features of frequent Idiopathic ventricular premature complexes in the Korean population. *Korean Circ J* 2015;45:391-7.
2. Hayashi H, Fujiki A, Tani M, Mizumaki K, Shimono M, Inoue H. Role of sympathovagal balance in the initiation of idiopathic ventricular tachycardia originating from right ventricular outflow tract. *Pacing Clin Electrophysiol* 1997;20(10 Pt 1):2371-7.
3. He W, Lu Z, Bao M, et al. Autonomic involvement in idiopathic premature ventricular contractions. *Clin Res Cardiol* 2013;102:361-70.
4. Aparci M, Ozturk C, Celik T, et al. Can a novel scoring system derived from hemodynamic and anthropometric variables predict sympathetic drive in young patients? *Blood Press Monit* 2016;21:21-6.

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• The authors have no financial conflicts of interest.

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Response

Author's Reply to Mehmet Dogan, et al

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My colleague and I appreciated the comments of Doctor Mehmet regarding the sympathetic activity in patients with idiopathic ventricular premature complexes (VPCs). As Dr. Mehmet mentioned in his letter, a medical condition increasing sympathetic activation, such as anemia, hyperthyroidism, smoking or alcohol usage, aggravates the frequency of VPCs and its outcomes. However, in some patients without these medical conditions, frequent VPCs may be observed and measurement of sympathetic activity may help to understand the cause of idiopathic VPCs in these patients. The study conducted by Aparci et al.¹⁾ was interesting but the area under the curve (AUC) of sympathetic activity index (SAI, AUC=0.68, 95% confidence interval=0.61 to 0.75) is not sufficient to predict progression of left ventricular hypertrophy. The major factor affecting the results might be that the SAI is a cross-sectional concept but the progression of left ventricular hypertrophy develops with accumulation of long-term sympathetic hyperactive status. If the SAI is compensated, a defect by long-term ambulatory monitoring of heart rate and blood pressure reflecting the change of circadian rhythm, then it may be a more effective

tool for the measurement of sympathetic activity. However, as the report of Hayashi et al.,²⁾ it is well known that sympathetic activity is one of the important triggers of frequent VPCs and progression of VPCs induced left ventricular dysfunction. Unfortunately, as a retrospective study, there were several limitations to estimate the SAI, including hypertensive status. We anticipate that further consideration of the sympathetic drive will help to verify the characteristics of VPCs and its association with left ventricular dysfunction in prospective studies.

References

1. Aparci M, Ozturk C, Celik T, et al. Can a novel scoring system derived from hemodynamic and anthropometric variables predict sympathetic drive in young patients? *Blood Press Monit* 2016;21:21-6.
2. Hayashi H, Fujiki A, Tani M, Mizumaki K, Shimono M, Inoue H. Role of sympathovagal balance in the initiation of idiopathic ventricular tachycardia originating from right ventricular outflow tract. *Pacing Clin Electrophysiol* 1997;20(10 Pt 1):2371-7.