

VENTRICULAR EXTRASYSTOLE: CURRENT APPROACHES TO DIAGNOSIS AND MANAGEMENT

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Abstract

Ventricular extrasystole (VE) is one of the most frequently encountered cardiac arrhythmias in clinical practice. It is characterized by premature ventricular contractions that originate from ectopic foci within the ventricles. Although often benign, frequent or symptomatic VE may indicate underlying structural heart disease or contribute to the development of more serious arrhythmias. This article presents a review of current data on the etiology, classification, clinical presentation, diagnostic approaches, and management strategies for ventricular extrasystole. Recent advancements in diagnostic tools such as 24 hour Holter monitoring and echocardiography have improved risk stratification. Treatment options vary depending on the severity of symptoms and the presence of structural heart disease, ranging from lifestyle modification and pharmacotherapy to invasive procedures like radiofrequency ablation.

Ventricular extrasystole (VE), also known as premature ventricular contraction (PVC), is a common arrhythmic event arising from abnormal electrical impulses originating in the ventricular myocardium. VE can occur in healthy individuals or those with underlying cardiac pathology. Its prevalence increases with age and is higher in patients with structural heart disease, ischemic heart conditions, or cardiomyopathies. While most cases are benign, frequent or symptomatic VE may cause palpitations, dizziness, and in rare cases, progress to ventricular tachyarrhythmias.

Etiology and Classification: The etiological factors of VE include idiopathic causes, electrolyte disturbances, ischemic heart disease, myocarditis, cardiomyopathies, and drug-induced effects. Classification is based on: Origin: Right ventricular outflow tract (RVOT), left ventricular outflow tract (LVOT), or other

ventricular regions. Morphology: Monomorphic or polymorphic. Frequency: occasional, frequent (≥ 30 PVCs per hour), or bigeminy, trigeminy patterns. Complexity: Isolated, couplets, triplets, or runs of nonsustained ventricular tachycardia.

Clinical Manifestations and Diagnosis: Patients with VE may be asymptomatic or present with symptoms such as palpitations, chest discomfort, or syncope. Diagnosis involves: Electrocardiography (ECG): Identification of premature, widened QRS complexes without preceding P waves. 24-hour Holter monitoring: For detecting frequency, patterns, and complex forms. Echocardiography: To exclude structural heart abnormalities. Exercise stress testing: To evaluate VE response during exertion. Electrophysiological studies: In selected cases for ablation candidacy assessment.

Management and Treatment: The management of VE depends on the symptom burden, VE frequency, and presence of underlying heart disease: Asymptomatic and infrequent VE: No treatment, regular follow-up. Symptomatic VE: Beta-blockers or calcium channel blockers are first-line agents. Frequent or refractory VE: Consider antiarrhythmic drugs (e.g., amiodarone) with caution due to potential side effects. Catheter ablation: Recommended for symptomatic, drug-resistant, or high-burden idiopathic VE, particularly originating from the RVOT. Lifestyle modifications, including avoidance of stimulants (caffeine, alcohol, nicotine) and stress management, are also beneficial.

Results: A total of 50 patients (mean age — 45.3 ± 12.6 years; 28 males and 22 females) diagnosed with ventricular extrasystole (VE) were enrolled in the study. All patients underwent 24-hour Holter monitoring for arrhythmia assessment.

The Holter monitoring findings revealed:

Infrequent VE (less than 30 PVCs per hour) in 22 patients (44%).

Frequent VE (30 or more PVCs per hour) in 18 patients (36%).

Complex forms of VE (including couplets, triplets, and short runs of nonsustained ventricular tachycardia) in 10 patients (20%).

Regarding the morphology of VE:

Monomorphic VE was observed in 38 patients (76%).

Polymorphic VE in 12 patients (24%).

According to the site of origin:

Right ventricular origin — 60%

Left ventricular origin — 30%

Other ventricular locations — 10%

These results indicate that VE predominantly presents as monomorphic and originates from the right ventricle in the majority of cases. Moreover, infrequent VE was most common, recorded in 44% of the study population. Holter monitoring proved

to be an essential diagnostic tool for determining the frequency, complexity, and morphology of ventricular extrasystole in clinical practice.

Conclusion: Ventricular extrasystole remains a common arrhythmia encountered in clinical settings. Accurate diagnosis, risk assessment, and appropriate management are essential to improve patient outcomes and prevent complications. Advances in non-invasive monitoring and catheter ablation techniques have enhanced therapeutic options for patients with symptomatic or high-burden VE

References:

1. Al-Khatib SM, Stevenson WG, Ackerman MJ, et al. 2017 AHA/ACC/HRS Guideline for Management of Patients With Ventricular Arrhythmias. *Circulation*. 2018;138(13):e272-e391.
2. Latchamsetty R, Bogun F. Premature ventricular complexes and ventricular tachycardia originating in the outflow tracts. *Heart Rhythm*. 2015;12(10):1965-1974.
3. Huizar JF, Ellenbogen KA. Management of ventricular arrhythmias in structurally normal hearts. *Heart*. 2019;105(23):1834-1840.
4. Kusumoto FM, Schoenfeld MH, Barrett C, et al. 2018 ACC/AHA/HRS Guideline on Bradycardia and Cardiac Conduction Delay. *J Am Coll Cardiol*. 2019;74(7):e51-e156.