



PAROXYSMAL CARDIAC ARRHYTHMIAS: CLASSIFICATION, DIAGNOSIS, AND TREATMENT STRATEGIES

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Abstract: Paroxysmal cardiac arrhythmias are characterized by the sudden onset and spontaneous termination of abnormal heart rhythms. These disorders represent a significant clinical challenge due to their variable presentation, potential hemodynamic consequences, and risk of severe cardiovascular complications. The most common forms include paroxysmal supraventricular tachycardia, atrial fibrillation, atrial flutter, and ventricular tachycardia. Accurate diagnosis relies on electrocardiography, Holter monitoring, event recorders, and electrophysiological studies. Treatment strategies depend on the type of arrhythmia, symptom severity, and associated cardiovascular conditions. Management may include lifestyle modification, pharmacological therapy, electrical cardioversion, catheter ablation, and implantable cardiac devices when indicated. Early recognition and appropriate treatment are essential for preventing complications and improving patient outcomes. This thesis reviews the classification, diagnostic approaches, and current treatment strategies for paroxysmal cardiac arrhythmias.

Keywords: paroxysmal cardiac arrhythmias, heart rhythm disorders, supraventricular tachycardia, atrial fibrillation, atrial flutter, ventricular tachycardia, electrocardiography, Holter monitoring, catheter ablation, antiarrhythmic therapy.

Paroxysmal cardiac arrhythmias are characterized by the sudden onset and termination of abnormal cardiac rhythms. They may occur in individuals with or without structural heart disease and can range from benign episodes to life-threatening conditions. The prevalence of paroxysmal arrhythmias has increased due to population aging, improved diagnostic methods, and the growing incidence of cardiovascular diseases. Paroxysmal arrhythmias are generally classified into supraventricular and ventricular forms. Supraventricular arrhythmias originate above the ventricles and include paroxysmal supraventricular tachycardia (PSVT), paroxysmal atrial fibrillation (PAF), and atrial flutter. Ventricular arrhythmias



originate within the ventricular myocardium and include ventricular tachycardia and, in severe cases, ventricular fibrillation. The clinical significance of these arrhythmias depends on their duration, frequency, hemodynamic impact, and associated cardiovascular disorders. Patients with paroxysmal arrhythmias commonly present with palpitations, dizziness, chest discomfort, shortness of breath, fatigue, or syncope. However, some episodes may remain asymptomatic and are detected only during routine examinations. Therefore, accurate diagnosis is essential for effective management and prevention of complications. Electrocardiography (ECG) remains the cornerstone of arrhythmia diagnosis. Since arrhythmic episodes are often intermittent, continuous ambulatory monitoring using Holter ECG, event recorders, or implantable loop recorders may be required. Echocardiography is useful for assessing structural heart abnormalities, while electrophysiological studies help identify the exact mechanism and origin of complex arrhythmias. The treatment of paroxysmal cardiac arrhythmias depends on the type of arrhythmia, symptom severity, and underlying cardiac conditions. Acute management may involve vagal maneuvers, antiarrhythmic medications, or electrical cardioversion. Long-term treatment focuses on preventing recurrence and reducing the risk of complications. Pharmacological therapy commonly includes beta-blockers, calcium channel blockers, and antiarrhythmic agents. Catheter ablation has emerged as a highly effective treatment option for many supraventricular arrhythmias and selected ventricular arrhythmias. In high-risk patients, implantable cardioverter-defibrillators may be indicated to prevent sudden cardiac death. Recent advances in electrophysiology and cardiac imaging have significantly improved the diagnosis and treatment of paroxysmal arrhythmias. Early recognition and individualized therapeutic approaches contribute to better clinical outcomes, symptom control, and quality of life for affected patients.

Conclusion

Paroxysmal cardiac arrhythmias are among the most common disorders of cardiac rhythm and represent an important clinical problem due to their potential impact on cardiovascular health and quality of life. They may manifest as supraventricular or ventricular arrhythmias and vary considerably in clinical severity. Accurate diagnosis through electrocardiography, ambulatory monitoring, and electrophysiological studies is essential for determining the appropriate therapeutic approach. Modern treatment strategies include pharmacological therapy, electrical cardioversion, catheter ablation, and implantable cardiac devices. Advances in diagnostic and therapeutic technologies have significantly improved patient



outcomes and reduced the risk of serious complications. Early detection, individualized treatment, and regular follow-up remain the key factors for successful management of paroxysmal cardiac arrhythmias.

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