Hypertrophic Cardiomyopathy
An Overview

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KEYWORDS

- Hypertrophic cardiomyopathy • Hypertrophic obstructive cardiomyopathy
- Sudden cardiac death • Left ventricular outflow tract obstruction • Risk stratification
- Sudden death in athletes • Heart failure

KEY POINTS

- Particularly in the summer heat athletes with undiagnosed HCM can experience critical events including sudden cardiac death.
- When histories and physicals result in positive cardiovascular findings, these individuals need referral to cardiovascular specialists.
- Patients with known HCM are also more susceptible to adverse events in the summer months because of the effects of heat and increased activity.
- Patients with HCM may also be admitted to the intensive care unit for other illnesses unrelated to HCM.
- The critical care team with deep understanding of the complexities surrounding the diagnosis and treatment of HCM are better equipped to deliver safe, effective, and excellent care.

INTRODUCTION

Critical care nurses have the responsibility to understand complex cardiovascular disorders. People living with hypertrophic cardiomyopathy (HCM) are particularly susceptible to adverse events when warm weather and strenuous activity are combined. Deeper understanding of the complexity of HCM results in safer bedside care of the patient with HCM who has experienced a critical event. This article reviews the pathophysiology of HCM and the proper screening of athletes for HCM before participation in recreational and competitive sports. Recommendations for activity, symptom management, and current treatment modalities options for patients with HCM are reviewed.

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INCIDENCE AND PREVALENCE

HCM is a complex, common genetic cardiovascular disease that affects at least 1 in 500 persons of the general population in the United States. This disease of the myocardium can easily remain undetected until the first symptom of sudden cardiac death (SCD). Although many individuals with HCM are minimally affected and have normal life spans, some patients with HCM have significant disease complications resulting in disease progression and premature death.[1–3] The underlying structural cardiac abnormalities found in HCM potentially affect individuals undertaking rigorous activity, such as athletes. In the United States, HCM is responsible for 48% of SCDs of athletes younger than age 35.[4] Overall, the estimated incidence of athletes that die of cardiovascular causes each year is very low; less than 300 per year out of more than 10 million athletes of all ages that participate in organized sports in the United States.[5] Despite this low incidence the impact of the sudden death of a young person can be profound.

PATHOPHYSIOLOGY

HCM is a disease of the myocardium characterized by ventricular hypertrophy, which can be diffusely distributed or localized to a single myocardial segment. There is a dramatic increase in the myocardial tissue with a nondilated ventricular chamber that is in the absence of other cardiac disease.[1,2,6] A comparison of types of cardiomyopathies and differences in the diameter of the ventricle during systole and diastole is displayed in **Fig. 1**. Severe thickening of ventricle wall is evident with HCM. It is distinctive among the cardiomyopathies and clinically presents in infants through the elderly. Although onset of symptoms can occur at any age, typically symptoms begin between the ages of 20 and 40. Symptoms vary but are a result of the following: (1) left ventricular outflow tract (LVOT) obstruction, (2) diastolic dysfunction, (3) myocardial ischemia, and (4) supraventricular and ventricular arrhythmias.[3,7]

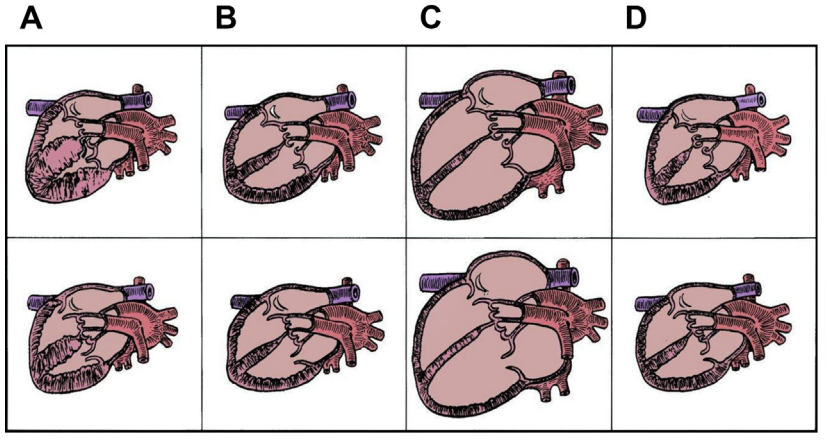

Fig. 1. Types of cardiomyopathies and differences in ventricular diameter during systole and diastole compared with a normal heart. (*A*) Hypertrophic. (*B*) Restrictive. (*C*) Dilated. (*D*) Normal. (*From* Urden LD, Stacy KM, Lough ME. Cardiovascular disorders. In: Urden LD, Stacy KM, Lough ME, editors. Critical care nursing: diagnosis and management. St Louis (MO): Mosby; 2010. p. 466; with permission.)