

# An In-Depth Analysis of Hypertrophic Cardiomyopathy

Anurag Bajaj\*

Department of Cardiovascular Medicine, Mayo Clinic, Rochester, USA

## Introduction

A condition known as hypertrophic cardiomyopathy (HCM) results in abnormally thickened (hypertrophied) heart muscle. The enlarged muscle of the heart might make it harder for it to pump blood. A lot of people with hypertrophic cardiomyopathy don't get a diagnosis because they don't show any symptoms and can live normal lives without serious problems. A small number of people with HCM may experience shortness of breath, chest pain, or problems with the electrical system of the heart, which can result in life-threatening irregular heart rhythms (arrhythmias) or sudden death.

A serious heart condition known as hypertrophic cardiomyopathy (HCM) affects the heart muscle. It may result in: Thinning of the muscle in the heart, particularly in the ventricles, or lower heart chambers.

- Stiffness of the left ventricle
- Changes in the mitral valve
- Changes in the cells

## Description

### Muscle thickening in the heart (myocardium)

The most typical location for this is your septum. The septum is a muscle wall that separates your heart's left and right halves. When the septum between your heart's bottom chambers (or ventricles) thickens, it causes problems.

A narrowing of the septum can restrict or limit blood flow from the left ventricle to the aorta, a condition known as outflow tract blockage. To overcome the narrowing or obstruction, the ventricles must pump harder. Hypertrophic obstructive cardiomyopathy is another name for this form of hypertrophic cardiomyopathy (HOCM). Other sections of your heart muscle, such as the bottom of your heart (called the apex), the right ventricle, or the entire left ventricle, may thicken as a result of HCM [1].

### Stiffness in the left ventricle

This happens as a result of cellular changes in your heart muscle that occur when it thickens. Your left ventricle is unable to relax and fill with blood regularly. There is less oxygen-rich blood pumped to your organs and muscles because there is less blood at the conclusion of filling. The rigidity in your left ventricle increases the pressure inside your heart, which can produce symptoms like chest pain [2].

- Breathing problems (shortness of breath)
- Feeling dizzy
- Feeling that your heart's beating too fast (palpitations)

\*Address for Correspondence: Anurag Bajaj, Department of Cardiovascular Medicine, Mayo Clinic, Rochester, USA, Email: abajaj253@gmail.com

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Received: 01 October, 2022, Manuscript No. jhoa-23-85977; Editor assigned: 04 October, 2022, Pre QC No. P-85977; Reviewed: 18 October, 2022, QC No. Q-85977; Revised: 24 October, 2022, Manuscript No. R-85977; Published: 01 November, 2022, DOI: 10.37421/2167-1095.2022.11.367

Your mitral valve does not function correctly when the left ventricular outflow tract narrows. This causes a blockage in outflow and raises pressure in your left ventricle. Your mitral valve colliding with your septum causes the blockage (obstruction). When this happens, your mitral valve often leaks, allowing blood to return to your left atrium.

### Changes in the cells (Changes in the cells of the heart muscle)

Under a microscope, the cells of the heart muscle do not appear to be parallel but rather chaotic and irregular (disarray). Your heart's bottom chambers' electrical signals may change as a result of this disorder, resulting in ventricular arrhythmia, a type of irregular heart rhythm [3].

In the United States, between 600,000 and 1.5 million people, or about 1 in 500 people, have hypertrophic cardiomyopathy. It affects one person in 700, which makes it more common than multiple sclerosis. The most common onset of this heart condition is during adolescence, but it can occur at any age. The majority of pregnant women with hypertrophic cardiomyopathy are able to carry their babies to term and deliver via vaginal birth, despite the fact that they may require specialized care, such as echocardiography. Talk to your doctor about the risks if you want to become pregnant. You can find out which medications for hypertrophic cardiomyopathy you can take while you're pregnant from your doctor. You might be able to get a pacemaker or an implanted cardioverter defibrillator (ICD) if you need one while you're pregnant. Hypertrophic cardiomyopathy can be caused by a number of factors, including:

**Genetics:** Hypertrophic cardiomyopathy is a condition that you can inherit from your parents and pass on to your offspring. This indicates that a gene that codes for the properties of the cardiac muscle is malfunctioning. Hypertrophic cardiomyopathy can be caused by a variety of genes. The form of hypertrophic cardiomyopathy that occurs in a family when a gene abnormality is present varies widely. It's possible that some people with the hypertrophic cardiomyopathy gene will never acquire the disease [4].

- Blood pressure that is too high
- Aging
- The cause of hypertrophic cardiomyopathy is sometimes unknown

### Risk factors

Hypertrophic cardiomyopathy is frequently inherited from one's parents (inherited). If you have a parent who has hypertrophic cardiomyopathy, you have a 50% risk of inheriting the disease's genetic mutation. Parents, children, and siblings of people with hypertrophic cardiomyopathy should talk to their doctors about getting tested for the condition [5].

### Complications

Many persons with hypertrophic cardiomyopathy (HCM) have no noticeable symptoms. Hypertrophic cardiomyopathy, on the other hand, might result in the following complications:

- Atrial fibrillation is a condition in which the heart beats irregularly. Heart muscle thickening, as well as aberrant heart cell structure, can produce electrical system alterations in the heart, resulting in fast or irregular heartbeats. Atrial fibrillation can also increase your chance of blood clots traveling to your brain and causing a stroke.
- Blood flow is obstructed. Many patients experience shortness of breath with exertion, chest pain, dizziness, and fainting spells as a result of their thickening heart muscle blocking blood flow exiting the heart.

- Problems with the mitral valve. The valve between the left atrium and the left ventricle (mitral valve) may not close if the thickening heart muscle restricts blood flow leaving the heart.
- Dilated cardiomyopathy is a condition in which the heart is dilated. The thickened heart muscle in a small proportion of patients with HCM may become weak and ineffective. The ventricle enlarges (dilates), and its ability to pump becomes less powerful.
- Heart failure is a serious condition. The thickening heart muscle may eventually become too stiff to fill the heart with blood properly. As a result, your heart is unable to pump enough blood to fulfill the demands of your body.

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## Conclusion

Sudden cardiac death is a type of sudden death. Hypertrophic cardiomyopathy can cause sudden death in people of all ages on rare occasions. Because many persons with hypertrophic cardiomyopathy are unaware of their condition, sudden cardiac death may be the first indicator that something is wrong. It can happen to young people who appear to be in good condition, such as high school athletes and other young, active adults.

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## Acknowledgement

None.

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## Conflict of Interest

None.

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**How to cite this article:** Bajaj, Anurag. "An In-Depth Analysis of Hypertrophic Cardiomyopathy." *J Hypertens* 11 (2022): 367