

## What is A Premature Ventricular Beat?

Premature Ventricular Beat (PVC) is an abnormal beat that originates from the lower chambers of the heart or ventricles. They are very frequent in people and many times are benign. They can also be a warning sign of something more serious with the heart. There are several reasons why a person can have PVCs. Most frequently, these are caused by a small nest of cells within the ventricles that fire off at their own rate. Heart muscle is unique in the body in that it is the only muscle that can spontaneously contract. Usually the muscle tissue in the upper part of the heart has a faster rate than the tissue in the lower part of the heart and so it beats first. On an EKG there is typically a narrow QRS complex pattern. PVC causes a wide QRS pattern. This is because with a PVC, the electrical conduction occurs through the heart muscle itself rather than specialized conduction fibers (Purkinje system). This takes more time and is represented by a wider than normal pattern on the EKG.

PVC can be a sign of something wrong with the heart muscle or chemicals in the blood. If heart muscle doesn't receive enough blood flow it can become more irritable and prone to causing PVCs. This can be seen in patients with narrowed coronary arteries. If a ventricle becomes enlarged it can also be more likely to develop PVCs. If a patient has had surgery and a cut has been made in the ventricle the scar that forms can be a source of PVCs.

Sometimes the heart muscle itself can be abnormal and prone to developing PVCs. The most common cause of this is called hypertrophic cardiomyopathy. In this situation the heart muscle is abnormally thick. It is one of the more common causes of sudden death in children and young adults. Sometimes an area of the heart can be infiltrated with non-muscle tissue (like fat or fibrous tissue). This can cause PVCs. This is more commonly seen in the right ventricle. There is another condition called Long QT syndrome that can cause PVCs, ventricular Tachycardia and sudden death. The underlying defect in this condition is that the muscle of the heart takes too long to recharge after it has contracted. This is caused by abnormal processing of electrolytes like sodium and potassium by individual muscle cells. This defect is usually inherited.

Treatment of PVCs depend on the cause. Many times in children it is not necessary to do anything, as these cause no harm. We become more concerned in children who have PVCs who have had previous heart surgery, Hypertrophic cardiomyopathy, Arrhythmogenic Right Ventricle, or Long QT Syndrome. We become concerned when PVCs become more frequent with exercise. Also, a patient becoming dizzy with frequent PVCs (runs) would warrant medical treatment. A commonly used medical treatment for PVCs are the beta blockers of which Inderal and Tenormin are common. Magnesium oxide can be used in some patients.

There are some patients that can have potentially lethal runs of PVCs (ventricular Tachycardia) and these patients can be treated by placing an internal defibrillator. This is like a pacemaker that can recognize a potentially lethal rhythm and shock the patient out of it.

If you have any questions please ask one of the doctors.



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