

If you identified number 3 well done. You may notice a pause after the ectopic. Try this exercise:

Place a piece of paper over the ectopic and make a pencil mark on the QRS of the beat immediately before the ectopic and another on the QRS immediately after the ectopic. You will have two pencil marks now. Place the first pencil mark on the beat after the ectopic – where does the second one come in? - two cycles later. You've just demonstrated a **full** compensatory pause seen after ventricular ectopics.

Further tests may be necessary to diagnose the cause of the ectopic beats and may include:

- Echocardiogram
- Coronary angiography

Treatment

Often ectopic heartbeats do not require treatment. The condition is treated if symptoms are severe or if extra beats are very frequent. An underlying cause, if discovered, may also require treatment.

If a person is otherwise healthy, the only treatment needed is to decrease stress and limit the use of alcohol and caffeine. Cold medicines, available without prescription, sometimes contain drugs (e.g., decongestants) that stimulate the heart and should be used with caution.

If symptoms are uncomfortable, or the pattern of VEBs indicates a problem, the physician may prescribe drug therapy. Beta-blockers are quite safe and are usually tried first.

A person who has a history of heart attack or heart disease, and is experiencing frequent or complex VEBs, is at greater risk of sudden death. Drug therapy with beta-blockers will be recommended. In addition, angioplasty or coronary

artery bypass surgery may relieve any underlying coronary artery blockage and reduce the danger of sudden death.

Treatment with antiarrhythmic drugs can suppress VEBs, but they can also increase the risk of a fatal abnormal rhythm. Often, extensive electrophysiologic testing and risk evaluation will be done before this method of treatment is prescribed.

Prognosis

In healthy people, VEBs are inconsequential. If the person with heart disease is able to find an effective means of controlling ventricular ectopic beats, the outlook is good.

My Interpretation

VEBs are a misfire at a low idle speed. There may well be nothing wrong with your motor in fact some of the best racing motors are 'lumpy' at idle! As you speed up the miss settles, but as you slow down the misfire returns. It is often annoying but if the echo and exercise test are normal then there is no reason to be despondent, your heart is normal and the ectopics are a sign of your hearts backup pacemaker system running self checks on itself. As above, drug treatment of ectopics, although effective in settling the misfire may paradoxically increase the risk of arrhythmia, sometimes fatal and is only recommended for the most intolerable of symptoms. Sometimes a warmdown period can be helpful for post exertional ectopy.

Dr. Brandon Wong
Specialist General Physician
The Clinic
167 Maunu Road
Maunu
Whangarei
Ph/fax (09) 438 8073

PATIENT INFORMATION

Dr. Brandon Wong (FRACP)

Ventricular Ectopics



What are Ventricular Ectopics?

A ventricular ectopic beat (VEB) is an extra heartbeat originating in the lower chamber of the heart. This beat, also called a premature ventricular contraction (PVC), occurs before the beat triggered by the heart's normal function.

(Alternative names: PVB (premature ventricular beat); Premature contraction; Premature beats; PVC (premature ventricular contraction); Extrasystole)

Ectopic means “an abnormal location or position of an organ or a body part, occurring congenitally or as the result of injury.” The root of the word originates from the Greek word 'ektos' which means 'outside.' When people have abnormal or extra heart beats that do not originate from the sinoatrial node, they get what is known as ectopic beats.

Cause

An ectopic beat is an isolated 'extra' heartbeat that is followed by a normal heartbeat. They are very common and the majority of us have them. Most people have at least one ectopic beat in every 24 hours. The impulse is generated somewhere in the heart outside the sinoatrial node (the natural pacemaker). Most people have occasional ectopic beats, even very fit people, but there is evidence to suggest that they may be more common in people who have heart disease. If there is no evidence of heart disease,

there is little or no danger to the individual. They are small variations in an otherwise normal heartbeat. Usually they occur without obvious cause and are benign.

Other times, however, they are associated with electrolyte abnormalities in the blood which should be corrected. They can also be associated with ischemia, or local reduction in blood supply to the heart. Sometimes they occur in hearts with valve disease, or hearts with weak musculature. In addition, ectopic beats may be caused or made worse by excessive smoking, alcohol consumption, caffeine, certain medications, and some illicit drugs.

The heartbeat

A heartbeat starts as a small electrical impulse in a special part of the heart wall called the sinus or sinoatrial node (SAN). This is sometimes called the heart's natural "pacemaker". A network of nerves conduct this impulse across the top chambers of the heart (atria) to the atrioventricular node (AVN). The impulse is then rapidly transmitted down the main conducting pathway in the muscle between the two lower, larger, chambers (ventricles).

Your heart will normally beat between 60 and 100 times a minute when you are resting.

Each heartbeat can be shown electronically on a heart tracing, also called an electrocardiogram or ECG.

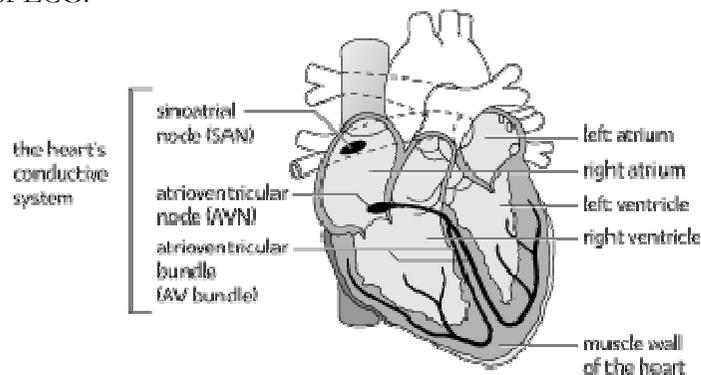


Illustration of the heart and heart tracing

Everyone experiences some variation in their heartbeat at certain times and may occasionally feel palpitations. Palpitations are an unpleasant awareness of your heartbeat, often described as a thumping in your chest and can be quite normal.

What are the symptoms of ectopic beats?

A single ventricular ectopic beat has very little effect on the pumping ability of the heart and usually does not cause any symptoms. If a symptom is felt, it is the feeling of a strong or skipped beat, often described as a thump, kick, or flip-flop. Sometimes, the sensation is referred to as a fullness in the neck. It may feel like a thud in the chest, an irregular heart rhythm, or a missed heartbeat. Sometimes people notice ectopic beats when lying in a position where they can 'hear' their heartbeat. Tiredness or alcohol may increase the incidence of extra beats

Quite often people become anxious when they experience ectopic beats that become frequent or rapid, causing the atria or ventricles to beat fast continuously. This can be uncomfortable and some people may also experience symptoms such as dizziness. In these instances, further investigation and possible treatment may be necessary.

If the ectopic beats are frequent or are associated with other symptoms such as breathlessness, chest pain or occur in the elderly, you should seek medical advice.

Tests

A physical examination may show an occasional irregularity, but if the ectopic beats do not occur frequently, they may not be detectable on physical exam. Blood pressure is usually normal.

The following tests may be used to diagnose an ectopic heartbeat:

- ECG
- Continuous ambulatory cardiac monitoring (Holter monitor)

With a **24-hour ambulatory ECG monitor** recording leads are stuck to the chest and connected to a small tape recorder that is worn on a belt around the waist. This records the heart rate over a 24-hour period.

ECG: Ventricular ectopics occur when an irritable focus within the ventricle fires off an impulse before the sinoatrial node. The impulse travels through the ventricular myocardium resulting in a large, **wide and bizarre** shaped QRS complex. (usually wider than 0.12 secs)

The underlying pacing of the sinoatrial node is unaffected and so the beat after the ventricular ectopic will arrive on time. This results in a **compensatory pause**.

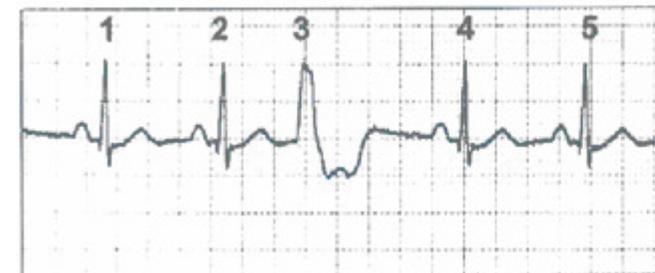
Two successive ventricular ectopics are referred to as **'couplets'**. Short bursts of three or more consecutive ventricular ectopics are referred to as **salvos**.

When a ventricular ectopic occurs every second beat it is known as **ventricular bigeminy**

What to look for on the ECG:

- The ectopic beat comes early in the cardiac cycle
- The P wave is not obviously visible
- The QRS complex is a wide bizarre shape as the impulse is transmitted through the myocardium and not the conduction system. This is a slower mechanism that causes a widening of the QRS

Look for these features in the following example of a ventricular ectopic:



Which beat do you think comes early?