What is Heart Block?

Heart block is a term that we use to describe a condition where there is an abnormality in the conduction (or electrical) system of the heart. Heart block can be called first, second or third degree.

The electrical system of the heart has several components. The heartbeat actually consists of two different parts. The contraction of the upper chambers of the heart occurs first and is controlled by an area called the S.A. Node. The contraction of the upper chambers (or Atria) causes the blood in the atria to be squeezed into the ventricles and fill them. A certain period of time after the atria contract (usually less than 0.2 seconds), the ventricles then contract. This fills the ventricles. Having the ventricles full before contracting allows the heart to beat more efficiently. The part of the electrical system that controls how long the delay there is between the contraction of the atria and ventricles is called the A.V. Node. The Purkinje system is the part that rapidly conducts the electrical impulse to the tip of the heart, allowing efficient contraction of the ventricles to pump blood out to the body.

First-degree heart block is a term used to describe an unusual delay between the contraction of the atria and ventricles. In this condition there is still always one ventricular contraction for every Atrial contraction. The patient is almost always unaware of this and the doctor cannot hear this on physical exam. It ~s seen only on a test called an electrocardiogram (or EKG). We normally consider a delay of more than 0.2 seconds between the beginning of the contraction of the atria and the beginning of contraction of the ventricles to represent first-degree heart block. This is normally not a problem to the patient. It can sometimes be caused by infections and certain medications like Digoxin and Verapamil.

Second-degree heart block is a bit more serious and represents a condition where sometimes there is not a ventricular beat for every Atrial beat. There may be one ventricular beat for every two Atrial beat or one for three, or 2 for 3 beats etc.. What is happening is that not every Atrial beat is being conducted to the ventricles. Again, this can be caused by infections, certain medications and sometimes occurs after heart surgery or a heart attack. It can be caused by Long QT Syndrome. This is more serious because sometimes the heartbeat may be too slow and make a person tired or even faint. Many times a patient can feel an irregular pulse with this condition. It is diagnosed with an EKG. Mobitz type 1 (Wenckbach) is usually benign and represents increased vagal tone.

Third degree heart block is the most serious of the three types. In this condition there is no relationship between the contraction of the atria and the ventricles. The heart rate is almost always slower than normal (the " normal " heart rate of the ventricles is much slower than the S.A. node, around 40 to 50 beats per minute). This is frequently diagnosed early in life because the pediatrician finds that the baby's heart rate is slower than it should be. When found in the newborn period it is frequently caused be a condition of the mother called Lupus (SLE). It can also be caused by infections, medications and sometimes heart surgery. Most children with this condition will need to have a pacemaker.

When heart block causes the heart rate to be too slow and the patient feels tired, or faint or the heart becomes enlarged, we need to treat this. The treatment of choice is a pacemaker. This is a device that electrically stimulates the ventricles to make the patient have a heart rate that is equal to the rate of the atria. In other words, normal. This allows the patient to have a more normal activity level. Pace makers use a battery and have to be replaced every three to ten years depending on how much electricity is used.

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

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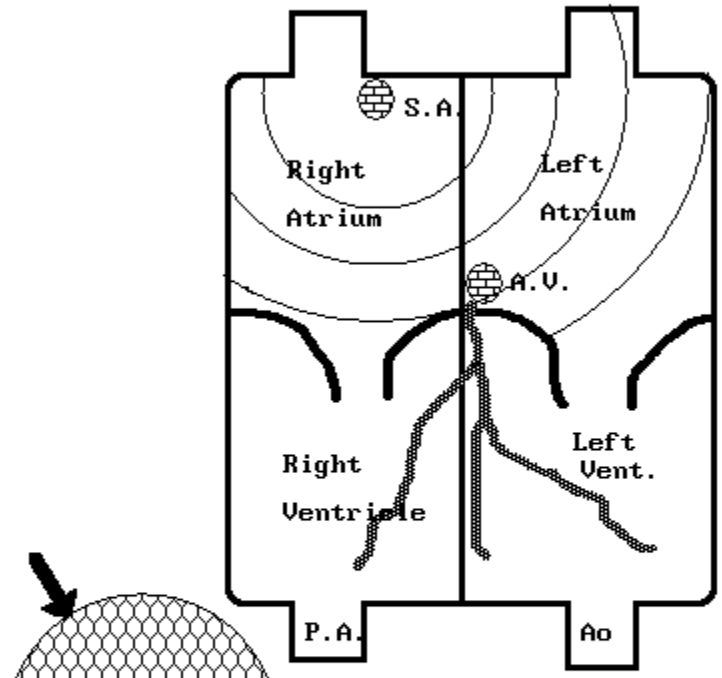

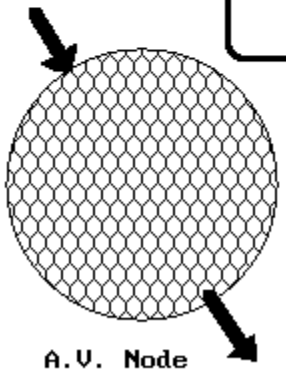

Normally the A.V. Node serves as a delay switch to allow time for the ventricles to fill. It is the only place in the heart where the electrical impulse can cross from the atria to the ventricle.