

COMPLETE HEART BLOCK

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THE TERM heart block in clinical medicine is generally used to refer to impaired conduction between the atria and ventricles. Atrio-ventricular block has been classified into three grades according to its severity.

1st Degree Heart Block : All atrial impulses are conducted to the ventricles, but conduction time is prolonged and this is recognized in the cardiograph by lengthening of the P. R. interval.

2nd Degree Heart Block: Some atrial impulses reach the ventricles, whereas others are blocked at the A. V. Junction. The more advanced stages of second degree heart block show a 2 : 1, 3 : 1, or even 4 : 1 A. V. conduction ratio. This means every second, third, or fourth impulses are blocked from reaching the ventricular conduction system.

3rd Degree Heart Block : No atrial impulses reach the ventricles and complete heart block is said to be present. The atria and ventricles then beat independently. Slow ventricular rate.

Aetiology : There are many well recognized causes of A. V. block. These include congenital A. V. block, digitalis intoxication, active rheumatic carditis, diaphragmatic myocardial infarction, and chronic coronary artery diseases. It used to be assumed that in majority of patients with established chronic complete heart block, the cause was arterio-sclerotic or hypertensive heart disease. It has recently been recognized that this assumption is unjustified. Complete heart block complicating acute myocardial infarction almost always resolves with a return of normal sinus rhythm in patients who survive. A. V. block are due to focal fibrotic lesions of the conduction system unassociated with coronary disease. Complete heart sometimes occurs in later life in patient with chronic rheumatic heart disease. Diphtheritic myocarditis was common with heart block as a dreaded complication. Numerous workers have reported a relatively high incidence of diphtheria in past histories of patients with complete heart block.

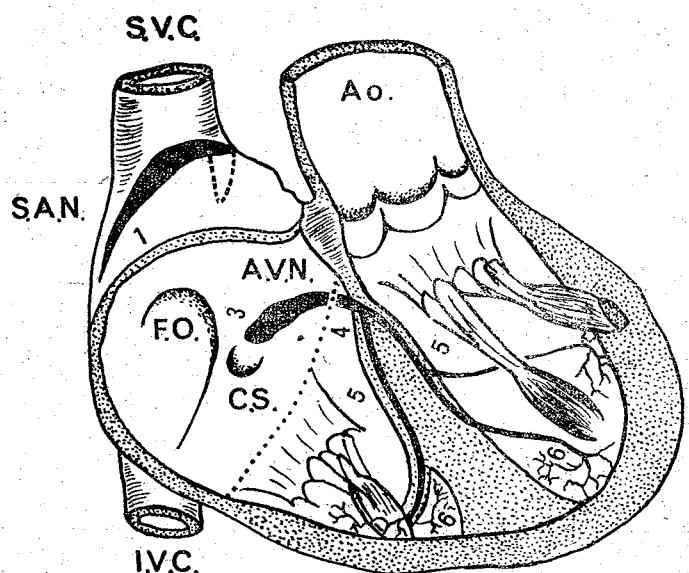
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Patients suffering from A. V. conduction disturbances are liable to attacks of paroxysmal cerebral ischemia due to sudden cessation of the circulation. Such episodes are called "Stokes—Adam's Attacks".

This clinical symptoms vary with the duration of the arrest. If this lasts 2-5 seconds, the patient may only notice, dizziness or faintness, with a momentary sense of blockness. When arrest lasts 5-10 seconds consciousness is usually lost, skin looks pale, particularly if the patient is standing he will fall to the ground just as in epilepsy, on recovery he may remember nothing of the attacks. If circulatory arrest persists for 15 seconds or more convulsive movement may occur with stertorous breathing cyanosis and after 30 seconds the patient may appear dead. Patients who get strokes—Adams attacks—are frequently required immediate treatment. One method is to give Atropine in order to raise the heart rate above 40 beats per minute which is usually sufficient to a workable cardiac output.

More recently small electrical devices (pace makers) have been developed. Some of these are actually inserted inside the chest to initiate an artificial electrical stimulus which is fed by means of electrodes to the ventricular muscle and induce ventricular contractions. There are many kinds of Pacemakers and the electrodes.

1. **The External Type of Pacing :** Electrodes are used over closed chest as an emergency measure. High voltage is required. Voltage and rate are adjustable and can be operated by the nurse.



The Electrical Conduction from SA Node to Ventricle :
(1 & 2) The impulse begins in the SA node and spreads through the atrial muscles. (3) It crosses the atrio-ventricular (AV) node (4) It passes down the Bundle of His (5) Descending through the left and right bundle branches. (6) The impulse finally reaches the terminal Purkinje fibres and then ventricular contraction occurs.