

Artificial Pacing of the Heart and the Nurse

J. Priyadharsini*

CARDIAC PACING is a means by which the heart may be stimulated artificially. The function of pacemakers is to increase the heart's Ventricular rate, by applying a current pulse from an electrical source. By this advice the ventricular contractions are initiated and maintained at a rate that maintains cardiac output in accordance with the patient's normal activity.

The electrical circuit with a positive and a negative source is complete with the power source, that is the pacemaker which is necessary to pace the heart. The catheter that is placed in the heart is the negative pole and is attached to the pacemaker by a black wire. The indifferent electrode which is a positive pole is attached to the pacemaker by a red wire.

Indications

The one important indication for cardiac packing is, bradycardia which may be associated with acute myocardial infarction, digitalis, toxicity or idiopathic fibrosis of the conduction system.

Pacing may also be indicated in patients who have had Stoke Adams attacks.

Types of Pacing

Temporary Pacing or Short Term Pacing : This is used when patient needs emergency therapy. The external jugular vein is used in this process.

Permanent or Long Term Pacing : The pacemaker used for permanent pacing is smaller compared to those used for temporary pacing. The pacemaker may be fixed in the abdominal wall or

may be carried in a pocket in the clothing.

The Catheter may be passed through any of the following veins : subclavian, external jugular vein, femoral.

E.C.G. is monitored while the catheter is being passed. It is done under fluoroscopic control so that the course of the catheter is observed as it advances through S.V.C., R.A. and R.V. At the right ventricle the catheter is fixed. The proximal end of the wire may be brought externally and attached to pacemaker carried in the pocket. The indifferent electrode is buried in the subcutaneous tissue near the catheter and is attached to the pacemaker by a red wire.

Once the catheter is stable, the voltage is adjusted to a minimum voltage necessary to pace.

The need for temporary or permanent pacing is determined depending upon the pathologic condition of the heart. Complete heart block as a result of myocardial infarction necessitates temporary pacing as the block in this case is the result of transient ischemia and usually resolves in one to five days. On the other hand complete heart block due to stoke Adam attacks requires permanent pacing.

Nursing Intervention : The Nurse plays a vital role in the care of patients with pacemaker. She must be familiar with the condition which necessitates implantation of the pacemaker. She must be vigilant and observant to spot any pacemaker difficulty.

The patient remains in the hospital following implantation of the pacemaker for a few days. With temporary pacing catheter displacement may be a danger.

Hence this must be prevented. This extremity through which the catheter has been passed must be immobilised.

It is essential to watch for signs of inflammation around the catheter insertion in temporary pacing. Thrombosis of the vein may occur if the catheter remains in place for more than a week. Inflammation around the electrodes may lead to an increase in the power needed to pace the heart. The permanent pacemaker will have to be brought out and worn as external pacemaker if sepsis occurs.

Constant observation of E.C.G. Screen is essential so that any disturbance in the cardiac rhythm may be detected which is a clue to the functioning of the pacemaker. Any irregularities in the pulse must be reported.

Watching for competition which is a problem with fixed pacemaker is also the responsibility of the nurse. Competition occurs between the stimuli from within patient's own heart and pacemaker stimuli. Competition by premature ventricular contraction is dangerous.

When the temporary pacemaker is stopped for sometime as a "trial", the nurse must be alert in checking the heart rate, pulse and the blood pressure vary frequently and any change in these must be promptly reported.

The patient and the family must be prepared for self care. The patient must be instructed to count his pulse (if he could be relied on) and report any irregularity. Symptoms of failure to generate impulse, such as dizziness, loss of consciousness, should be reported.

*Sister in-charge, Cardiac Surgical intensive Care Unit, C.M.C. Hospital, Vellore.