



*Successful Utilization of Trans Cutaneous Pacemaker Device in Improving Outcome of Acute Coronary Syndrome Associated Complete Heart Block- Two Case Scenarios in Resource Deficient Health Care Facility*

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**Case Scenario 1:** 72-year-old male presented to the emergency department with complaints of chest pain for 2 hours. Chest pain was associated with profuse diaphoresis, dyspnea at rest and lightheadedness. At admission patient was in pain, distress with systolic BP- 60 mm of Hg, heart rate-28/min, respiratory rate-32/min, So<sub>2</sub> @ room air-non recordable and 12 lead ECG showed complete heart block (CHB) with ST elevation in lead II, III, aVF, V2-V6. Along with supportive measures, inj. Atropine 1.2 mg (intravenous) IV stat was given, and thrombolysis was done with injection Tenecteplase 40 mg IV. Subsequently his SBP improved to 80 mm of Hg, HR- 30-35/minute, ECG- showed complete heart block. Patient required urgent cardiac pacing and percutaneous intervention (PCI). Our center lacked PCI enabled facility was and nearest cardiac center was approximately 70 miles away. So patient was started on IV noradrenaline infusion, transcutaneous pacing (TCP) @ HR

of 60/min @ current of 55 mAmp, which helped in achieving SBP-90 mm of Hg. With TCP leads attached patient was shifted to PCI enabled center in ACLS ambulance where patient reached in a hemodynamically stable condition. On reaching at PCI enabled center patient's ECG showed normal heart rate with first degree heart block. A coronary angiography was done which was followed by successful stent insertion to right coronary artery. On follow up at 4 weeks patient is doing fine with 2D echocardiography showing LVEF of 35-40%.

**Case Scenario 2:** A 57year old male farmer presented with recurrent vomiting's and profuse diaphoresis while driving tractor in fields. Patient was brought to emergency in unconscious state. His blood pressure was 80/60 mm hg. Pulse was 30/min with a saturation of 76% and with diffuse crepitations due to aspiration of vomitus contents. ECG showed ST elevation

in inferior leads II, III, aVf. A diagnosis of inferior wall ST Elevation Myocardial Infarction was made. Patient was thrombosed with Tenecteplase 40 mg. In view of poor respiratory effort definitive airway was secured and a saturation of 95% maintained on ventilator. In view of symptomatic Bradycardia due to infarction inj atropine 0.6mg intravenous was given along with temporary trans cutaneous pacing was started at 60 amp where capture was ensured and a heart rate of 60 / min was set. Patient was shifted for Cath lab at other center in view non availability of services at our center. In Cath lab patient had 95% plaque obstruction in Right coronary artery. Percutaneous Transluminal Coronary Angioplasty was done and patient improved thereafter.

These two cases highlight that training and availability of transcutaneous pacing device is lifesaving in resource deficient scenarios.

### Discussion

Transcutaneous cardiac pacing is a temporary method of pacing that may be indicated in patients with severe symptomatic or hemodynamically unstable bradyarrhythmias. It is particularly helpful in patients with transient conditions, such as atrioventricular block in the setting of inferior wall myocardial infarction, or when transvenous pacing is not immediately available. External noninvasive pacing has several advantages over invasive pacing. It is widely and easily available in emergency, along with defibrillator units. It is easy to perform and requires minimal training and, therefore, may be instituted by physicians, nurses, and paramedics. Because it can be performed quickly, noninvasive pacing can be initiated almost immediately, eliminating the time taken for insertion of transvenous pacing. Noninvasive pacing carries a low risk of complications compared with invasive techniques, and it is more cost-effective. The American College of Cardiology and the American Heart Association have issued guidelines regarding the use of external pacing in the setting of acute MI [1].

### Class I Indications of Temporary Pacemaker:

- Sinus bradycardia (rate < 50 beats/min) with signs of hypotension (systolic blood pressure < 80 mm Hg) that is unresponsive to drug therapy
- Mobitz type II second-degree AV block.
- Third-degree heart block.

- Bilateral BBB (alternating BBB, or RBBB and alternating LAFB or LPFB) irrespective of time of onset.
- Newly acquired or age-indeterminate LBBB, RBBB with LAFB, or RBBB with LPFB RBBB or LBBB with first-degree AV block.

External pacing has got some contraindications like severe hypothermia. In these patients, bradycardia may be a physiologic phenomenon resulting from decreased metabolic rate [2]. Also, as body temperature drops, the ventricles become more prone to fibrillation and more resistant to defibrillation [3]. Pacing is relatively contraindicated in asystole if the resuscitation efforts were delayed for more than 20 minutes, because of the poor resuscitation outcome in these patients [4-7]. In both case scenarios as mentioned in the manuscript trans cutaneous pacing was used successfully. It is recommended that in hospitals where Cath lab facilities are not available precious human lives can be saved in scenarios where unstable bradycardias of different etiologies come and after primary care patient can be shifted to cardiology center with a trans cutaneous pacer in a Advanced Cardiac Life Support Ambulance.

**Conflict of Interest:** Nil

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