Case Report

CPR-Internal Cardiac Massage

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A 32 years old serving PAF personal was due for ORIF Rt Femur at PAF hospital Sargodha. He met a road traffic accident 03 days earlier and sustained fracture of Rt Femur. On preanesthetic examination, he was assessed as ASA-I. His Hb was 11.0 Gms%, done 03 days earlier. On day of operation he was induced with 375 mg of thiopentone sodium with 1mg atropine. He went into sudden cardiac arrest just after induction. IPPV was given with 100% O_2 via endotracheal tube and closed cardiac massage was started immediately followed by defibrillation with 200 joule & then 350 joules but it was found totally ineffective as there were no peripheral pulses, heart activity nor any BP or SaO_2 recordable. After about 1½ minutes of futile effort of closed cardial massage, it was decided in consultation with senior surgeon to go for cardiac massage as last ditch stand. A modified approach was planned due to shortage of time and a bold incision was made in epigastric region and right hand was passed through this incision pushing the diaphragm upward against left hand already placed over rib cage. Intracardiac adrenaline was also given at the same time and long needle was effectively & correctly guided by right hand already inside epigastric region. After about 1/2 minute of open cardiac massage, spontaneous irregular cardiac contraction started appearing on ECG monitor and pulse was palpable over right hand. A bolus dose of 60 mg lignocaine was given followed by continuous infusion and patient gradually became stable emodynamically and cardiac activity reverted to regular sinus rhythm. Epigastric wound was stitched after securing bleeding points. Retrospectively patient had no abnormality. He was found to have very low Hb i.e 6.5 gm% as patient had probably continuously bled from fracture site into thigh which went unnoticed by us. Same patient under went successful operation 3 weeks later after giving multiple transfusions.

DISCUSSION

All anaesthesiologists are well-versant with CPR comprising of close chest or external cardiac massage. The need for such CPR commonly arises in operation room's and intensive treatment centre's, but occasionally the anaesthesiologist may be called for assistance in CPR in trauma centres. The effectiveness of close chest cardiac massage has been much investigated and some of the opponents outrightly reject the probability of any potential benefit to the patient. A number of guide-lines have been suggested to improve the efficacy of the manoeuvre, and it remains an accepted procedure in the usual setting. Open cardiac massage is indicated only in tightly controlled environments; when chest is already opened; with multiple rib fractures, when closed chest compression is impossible or may be more harmful than beneficial; and in pericardial temponade, when peri-cardiocentesis alone may not be adequate. As can be imagined, the inherent danagers of this sort of undertaking and the expertise required to meet the ultimate challenges necessitate that the internal cardiac compression be embarked upon only in operating areas, in the presence of an adequately trained surgeon.

The internal cardiac compression may be performed in two different ways, depending upon the prevailing circumstances. Transthoracic route requires an incision made in the fifth intercostal space from the midaxillary line to one inch from the sternum (avoiding the internal mammary artery). The lung is collapsed and the heart is compressed 60-80 times per minute against the sternum by the flat of one hand.

The pericardium may be incised and both hands used for direct compression.

Alternatively transabdominal route may be adopted. The procedure is usually reserved for open abdomen, but as in our case, if the conditions so permit, and the surgeon is already washed and gloved transverse or median incision is made. The diaphragm remains intact and the heart is compressed by one hand through the wound, against the sternum. The other hand is firmly held over the sternum, and a

combined pressure is usually necessary for adequate compression.

The standard drugs for resuscitation are used. Direct intracardiac injection can be given through the diaphragm.

Although the procedure is frought with complications, e.g., infection, hemorrhage, trauma to lungs, heart, and great vessels etc, we feel that it is worth trying if external cardiac compression is judged to be ineffective and the life of the patient is in jeopardy.

Open chest cardiac compression has shown superior haemodynamic, and cerebral viability in experimental animals but its application is obviously' restricted by its invasive requirements. A conventional open chest massage is especially indicated in cases of cardiac temponade and chest truma, but this modified approach via abdomen can also be tried especially in cases where closed cardiac massage is ineffective.

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Lt Col Muhammad Mubeen was born on 13 February 1959. He graduated from Army Medical College, Rawalpindi in December 1981. Soon after he was selected for grading in anaesthesia and was qualified as graded anaesthesiologist in April 1989. He qualified FCPS (Anaesthesiology) in October 1991. Since then he has served in various military hospitals as classified anaesthesiologist. Presently he is serving as Head of Department of Anaesthesiology & Intensive care, CMH Quetta.

QUICK ACTION PLANS

WHEEZING

CAUSES

1. Equipment:
   - ✡ Endotracheal tube inserted too far.
   - ✡ Kinked or partially blocked tube.
   - ✡ Over-distended endotracheal tube cuff.
2. Patient:

   Bronchial asthma (especially if inadequately anaesthetized).

   Pulmonary oedema.
3. Drugs:

   - Histamine releasing drugs
   - Non-selective B-blockers.
   - Adverse drug reaction.

A WHEEZE THROUGHOUT THE RESPIRATORY CYCLE SUGGESTS OBSTRUCTION WITHIN EQUIPMENT.

ACTION

1. Relive equipment cause.
2. Increase FiO2
3. Monitor ECG.
4. Bronchodilators:
   - * Salbutamol nebulised 2.5-5mg, or 250ug IV.
   - * Aminophylline 250-500mg IV slowly, followed by infusion of 0.5mg/kg/hr.
   - * Consider deepening anaesthesia or changing inhalational agent to halothane.
   - * In life threatening bronchospasm adrenaline should be considered.
5. Hydrocortisone 100mg IV 4hourly.
6. Paralyze and ventilate if exhausted, PaCO2>8kPa(60mmHg), increasing heart rate or fall of blood pressure.
7. Check chest X-ray to rule out pneumothorax, pulmonary oedema, aspiration or other pathology when patient stable.

(Brig M. Saleem)