

Cardio-Pulmonary Resuscitation

Making the Difference between Life and Death

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CARDIO-PULMONARY Resuscitation is a technique mastered by Nurses, Doctors and other hospital personnel the world over. Yet in our country CPR is given poor weightage and is very poorly practised.

It may be a fact that professionals attached to the I.C.C.U., I.C.U., O.T., Burns units, Tetanus wards do save patients going into cardiac arrest from imminent death. But it is important that this practice should become universal and not be restricted to those working in the above mentioned units. In a general ward, a Cardiac arrest may be taken care of in either of two ways. A resourceful nurse may call for help and start with a precordial thump, followed with external cardiac massage. Rarely she may give mouth-to-mouth ventilation. Another might turn positively nervous, page the doctor on call, start collecting drugs and arrive near the patient again only when the doctor arrives by which time it may be too late. To prevent a nurse from feeling inadequate in such a situation; it is important that she be aware of the right CPR techniques and the need for prompt resuscitation. The importance of mouth to mouth ventilation should be stressed, as this is often found to be repulsive to both our men and women.

Aim of Cardio-Pulmonary Resuscitation

CPR techniques are used to maintain both circulation and ventilation in an individual suffering from cardiac arrest.

It includes.

- External (Closed Chest) Cardiac Massage.
- Artificial ventilation of the Lungs by—Mouth to Mouth; Mouth to Nose; Mouth to Airway.

Cardiac Arrest

Cardiac arrest is a self-explanatory term. It is synonymous with sudden death. It refers to the sudden absence of the heart beat, stoppage of circulation of blood and the respirations. Causes of cardiac arrest include trauma, electric shock, drowning, poisoning, drug allergy, eg., Penicillin, diseases of the heart causing disturbed electrical activity, shock due to hypertension following surgery and others.

Signs of Cardiac Arrest: 1. Sudden loss of consciousness. 2. Apnea or gasping respirations. 3. Absent femoral, radial and carotid pulsations. Absence of the heart beat. 4. Dilating pupils,

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Complications Following Cardiac Arrest: Irreversible brain damage follows an untreated or unnoticed cardiac arrest.

The brain and associated central nervous system tissues contain some residual oxygen once the heart stops beating. This oxygen can sustain the tissues alive for 4 to 6 minutes. This period is followed by biologic death of the brain and resuscitation attempt after these four minutes is useless in most cases. Brain anoxia is prevented by starting external cardiac massage and artificial ventilation within 3 to 4 minutes of the arrest.

Steps in CPR: Once cardiac arrest has been identified, immediately summon help; notify the physician.

The Precordial Thump

The precordial thump is administered when arrest is witnessed. It is useful when given within a minute of the arrest. This blow is given from 8 to 12 inches above the patient's chest, directed to the middle and left of the sternum. It helps to convert ventricular tachycardia or ventricular fibrillation to a normal rhythm.

External Cardiac Massage

Pressure applied over the sternum helps to compress the heart between the sternum and the vertebral column. This pressure forces the blood into the systemic and pulmonary circulation.

Position of the Patient: Place supine on a firm mattress or on the floor in an emergency.

Position of the Resuscitator: Kneel, if victim on floor. Or stand close to the patient's chest. Keep shoulders directly over the patient's chest and keep your arms straight with elbows locked. Place the heel of the hand over the middle of the sternum, perpendicular to the sternum. Place the other hand over the heel of the first hand for greater pressure. Now press downwards on to the chest using your back and shoulders without bending your elbows.

Rate of Compression: Usually 60 to 80 beats per minutes.

Note: While both hands are used for E.C.M. in adults, only the index and middle finger are used to give massage to infants.

Artificial Ventilation of the Lungs

Clean the mouth of any secretions to have a patent airway, and avoid aspirations of secretions. Hyper extend the head, lift the jaw upwards at the

angle of the jaw to prevent the tongue from falling back. Now ventilate the lungs using mouth-to-mouth, or mouth-to-nose technique. Watch for the rise and fall of the patient's lungs, indicating thorough ventilation. Pinch the nostrils of the patient with your thumb and index finger while using mouth-to-mouth technique place mouth over mouth of the victim; inhale deeply, blow into victim's lungs after every third or fourth compression of the sternum.

Uses: Artificial ventilation helps to oxygenate the blood being pumped into the circulation by external cardiac massage and thereby prevents brain anoxia.

When one individual does CPR the ratio of compressions to ventilations can be as much as 15:1; If 2 persons resuscitate the ratio is reduced to 4:1.

Assessment for Signs of Improvement

Check the Carotid pulse, the femoral pulse at frequent intervals.

Constrictions of the pupils which indicates brain reoxygenation, onset of regular respirations, improved colour, body movement are signs of revival following a cardiac arrest.

Drugs

Drugs usually prescribed include:

Epinephrine: Injected intracardiac, with a 3.5 inch needle, of 22 gauge.

Calcium Chloride 10% soln or Calcium Gluconate: Injected I.V., improves cardiac contraction.

Sodium-bi-Carbonate: Injected I.V., corrects acidosis. Other drugs which may be called for includes Inj adrenaline, Lignocaine 1%, Dopamine, etc.

Duration for CPR

Perform CPR till the patient regains a good pulse rate;

—or till patient is declared dead by the physician;
—or till exhausted if alone and the victim shows no signs of improvement.

Ineffective CPR

Resuscitation may fail when techniques used are poor.

—In case of severe internal haemorrhage, cardiac tamponade.

—Chronic obstructive lung disease which prevents effective oxygenation of the blood; or aspiration of vomitus into the lungs.

Complications Associated with CPR

*Fractured or cracked ribs, pneumothorax, cardiac tamponade.

*Fracture of the sternum

*Pressure over the xiphoid process causing lacerations of the liver.

*Pressure over the epigastrium causing rupture of the liver, spleen.

*Metabolic acidosis.

*Irreversible brain damage.

Election for President, TNAI

Miss Anna Jacob, Miss A. Kuruvilla, Miss A. Cherian, Mrs. H. Chabook and Mr. C.P.B. Kurup are not available for election for the office of President, TNAI, as they have already completed one term of the office. The list of candidates eligible for election to the office appears elsewhere in this issue. The following members, from the list of those eligible for being nominated for election to the post of President, TNAI, have communicated their willingness to contest the election by May 25, 1987, the last date fixed for receipt of such communications: Dr. (Mrs) M. Dean, Mr. R.K. Dubey, Mr. H.B. Joshi, Mrs. A.D. Malhotra, Miss Durga Mehta and Sr. Ella Stewart.

Care of the Patient Following CPR

Admit to ICU, ICCU, for constant care and monitoring.

—Frequent check of vital signs for the first 24 to 48 hours.

Rise of temperature is indicative of brain damage or cerebral oedema.

—Routine chest X'ray.

—Blood gas and pH estimations to detect acidosis.

—Endotracheal intubation for unconscious patients. Continuous oxygen for 48 hours as respirations are depressed following cardiac arrest.

—Strict watch on the urine output; Inform if the output is less than 25 ml per hour.

—Psychological support for the patient, relatives and the surrounding patients in a general ward.

Conclusion

It is the nurse with the right approach who makes the difference felt between an effective and ineffective resuscitation. We hope the 'kiss of life' will help to effectively save more victims of cardiac arrest.

Bibliography

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