

Cardio-Pulmonary Resuscitation

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AIRWAY obstruction and hypoventilation are among the leading causes of death resulting from accident, heart attacks and other medical emergencies. Irreversible brain damage occurs if methods to resuscitate the patient in cardiac arrest are not instituted within 4 minutes. The brain tissue, unlike the other tissues can stand a state of hypoxia only for a period of 3—4 minutes.

Definition of Cardiac Arrest

Cardiac arrest is the sudden, unexpected cessation of heart beat.

Causes of Cardiac Arrest

Asphyxia : Common causes of asphyxia include : drowning, electric shock, carbon monoxide poisoning, smoke and gas inhalation, drug overdose, chemical poisoning, stroke, injuries to head, neck, chest and abdomen convulsions.

Signs of Cardiac Arrest

Unconsciousness ; Absence of all pulses including the major ones such as carotid and femoral ; Cessation of respiration ; Dilatation of pupils ; Absence of heart sounds on auscultation and Death-like appearance.

The emergency measures in the management of patients in cardiac arrest include external cardiac massage, artificial respiration and definitive therapy.

External Cardiac Massage

The principle of cardiac massage is to force blood out of the heart by compressing the heart between the sternum and the spine. When the lower end of the sternum is pushed towards the vertebral column, the heart is compressed between the two bony structures. The valves within the heart cause the contained blood to be ejected from the right side of the heart into the pulmonary artery

and from the left side into the aorta. When the pressure on the heart is released, the heart fills again from the veins.

Method

If the patient is in bed, place a wooden board between him and the mattress. If not, move him to the floor.

In giving external cardiac massage, pressure must be applied at exactly the lower half of the sternum in order to be effective.

Place the heel of one hand over the lower half of the sternum and place the heel of the other hand on top of the first hand. Push the sternum downward toward the spine about 4-5 c.m. and re-apply pressure every second.

Do not lift hand from the sternum between compressions. Compress with the heels of your hand keeping fingers raised. To avoid fracture of ribs, do not press against lateral aspects of chest.

Interrupt compressions for a short time every two minutes to check for the return of a spontaneous pulse.

Continue external cardiac massage until spontaneous pulse returns.

In small children compress with one hand only. In infants compress with tips of two fingers. The rate in children and in infants is 100-120 per minute.

Artificial Respiration

The unconscious patient will often have an obstructed airway due to his tongue falling back against the posterior pharyngeal wall or by regurgitated material.

Before starting artificial respiration it is essential to see that the airway is unblocked. With the patient in supine position lift up patient's jaw, tilt his head backward, blow into mouth or close lips and blow into nose. Watch chest expanding. When chest

moves, take your mouth off, repeat every 3-5 seconds.

In small children and infants blow gently into mouth and nose.

External cardiac massage and artificial respiration must be given simultaneously.

If only one person is available the ratio of external cardiac compression to artificial respiration should be 15 : 2. If two are available, the ratio should be 5 : 1.

Definitive Therapy

Intravenous infusion must be started as soon as possible.

Drugs

As soon as possible after the initiation of cardiac compression, adrenalin 1 mg. (1 : 1000) I.V. must be given. This or a larger dose may be repeated every 2-5 minutes as indicated.

50—100 ml. of Soda bicarb (8.4%) must be given I.V. to correct acidosis.

In cardiac arrest every single minute counts. The skill with which this emergency is tackled may determine life or death for the patient.

Care of Patients — (Contd. f. p. 342)

be fatigue, dyspnoea and restlessness. Observations have to be done under four basic physical facts namely colour, skin temperature, mechanics of respirations, and cough. Once the patient shows efforts for breathing, he is put on patient triggered cycle and he may be weaned from the respirator, if he shows rapid improvement. Gas studies such as PO_2 , Pco_2 , and PH are done prior to weaning the patient. Once the ventilation is satisfactory, it may be tried. Weaning is based on the work of breathing, the level of consciousness denoting the adequacy of the neuromuscular system, and the stability of the vital signs reflecting the integrity of the cardio vascular system.

Weaning process is never abrupt. The patient is put on a trial period of spontaneous breathing during which time he is given an air and oxygen mixture. Ventilation and blood gas readings are taken frequently and evaluated and the patient is observed closely for tachycardia, tachypnoea or dyspnoea. □

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