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Editorial

Sudden Cardiac Arrest (SCA) and Basic Life Support (BLS)

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Introduction

Sudden cardiac arrest is a deadly event, the leading cause of death worldwide. Sudden cardiac death (SCD) is defined as natural death due to a cardiovascular cause that occurs within one hour of the onset of symptoms. A sudden cardiac arrest (SCA) occurs when heart stops beating (asystole) or is not beating sufficiently (pulseless ventricular tachycardia or ventricular fibrillation) or acutely not able to pump sufficiently (electromechanical dissociation or pulseless electrical activity) to maintain organ perfusion (circulation) and life. As per global data, the incidence of SCA is 1 in 1000 people per year. In India large proportion of death due to sudden cardiac arrest occur in less than 50 years of age population. As per a lancet study in India 5-6 lakh people dies from SCA each year. Sudden cardiac arrest is often confused with heart attack, but both the entities are different though heart attack is the commonest cause of SCA apart from many other causes of SCA.

There is poor survival outcome from SCA in India due to low rates of by stander cardiopulmonary resuscitation (CPR), Lack of awareness and training for by stander CPR, Lack of uniform emergency medical service availability and utilization, no supportive health care policies, infrastructure for prompt care.

Community approach to reduce death from SCA needs rapid identification of the victim and implementation of CPR by those who first encounter the victim, mostly the lay man, who should call upon emergency medical service and initiate basic life support measures for witnessed out of hospital cardiac arrest (OHCA). The success is strongly related to the time between collapse and initiation of CPR and success decreases markedly after 5 minutes.

Success is better when the presenting rhythm is ventricular tachycardia (VT), worse for ventricular fibrillation (VF) and poor for pulseless electrical activity (PEA) and asystole. Outcomes also depend upon age, clinical state and comorbidities of the victim prior to arrest.

BLS - The initial steps in CPR

For lay responders pale or blue skin color, absence of respiratory effort or presence of only agonal respiratory effort is diagnostic of cardiac arrest. The first step for BLS is to verify the environmental safety of the site where the victim is lying and confirm that the victim is unresponsive. The rescuer should check for the response of the victim by tapping on both shoulders, shout for help, call someone else to call for emergency medical service by giving details of the location. In out of hospital cardiac arrest (OHCA), if only one witness is present, notification of the emergency personnel is the only activity that should precede chest compression. The sequence of BLS now is CAB (instead of ABC) - Compression, Airway, Breathing, based on the recognition that compression alone is the better strategy because it minimizes interruption in perfusion and avoids excessive ventilation. If airway obstruction is suspected one should adopt Heimlich maneuver which may dislodge the obstructing things. A trained health care provider would check for the pulse within 10 secs and will not delay initiation of chest compressions and assess breathing. Chest compression should be initiated without delay at a rate of 100-120/ minutes, depressing the sternum by 5cm (2 inch) and allowing full chest recoil between compressions. The palm of one hand is placed over the lower half of the sternum of the victim and the heel of the other hand rests on the dorsum of the lower part of the hand. The sternum is then depressed, with the resuscitator's arm straight at the elbows to provide a less tiring and more forceful fulcrum at the junction of the shoulders and back. Chest compressions generate forward cardiac output with sequential filling and emptying of cardiac chambers. Interruption of chest compression should be minimized to reduce organ ischemia. Ventilation may be administered with 2 breaths for every 30 compressions if a trained rescuer is present after head tilt and chin lift maneuver to open up the airway. For lay rescuer chest compression alone (hands only CPR) should be effectively applied to have similar benefits. If a second rescuer is present, they should be sent to seek out an automated external defibrillator (AED), which are now widely available in many public areas. When SCA is witnessed the use of AEDs by lay responders can improve cardiac arrest survival rates. Once AED patches are applied to the chest, AED will record the rhythm. AED will advise

delivery of a shock if the rhythm meets criteria for VT or VF. Chest compressions are continued while the defibrillator is being charged. As soon as a diagnosis of VF or VT is established a 200 Joules shock should be delivered. Chest compressions are resumed immediately and continued for 2 minutes until the next rhythm check.

CONCLUSIONS

The response to sudden cardiac arrest is driven by maintenance of continuous cardiopulmonary support by early CPR to restore return of spontaneous circulation (ROSC) as quickly as possible. Strategies to shorten response time by development of systems in which nonconventional first responders such as police, firefighters, security guards, and lay bystanders, start early BLS, deploy AEDs that are now commonly available in public places. This strategy may improve outcomes, primarily in public locations.

Maintain calm, Do not panic, Practice, Train more hands, Save more lives"

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