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Sudden cardiac death is a major health problem which most people think may not concern them. Each year, more than 300,000 people die suddenly, following a major heart attack, even before they get medical help. The real challenge to patients and medical professionals is can they identify who is at risk for a sudden death and what can be done to prevent such an unfortunate incidence. We have come a long way in identifying what causes sudden deaths, who are at a higher risk for such events, and what treatment options are available to prevent such events.

What is sudden cardiac death?

A person who has a heart attack can develop a fatal cardiac rhythm disturbance known as ventricular fibrillation or chaotic rhythm where the heart is not able to pump any blood. If this is not promptly treated with defibrillation and medications, the person can develop cardiac arrest that can lead to sudden death. Rarely some people may develop severe slowing of the heart rate to a point where life is not sustainable.

The main function of the heart is to pump blood to the rest of the body and to maintain brain function among others. When there is a major damage to the heart muscle, the heart loses its pumping efficiency and fails to deliver the required amount of

blood to the brain and other organs. When the blood supply to the brain is cut off for four minutes or longer, the brain suffers permanent damage.

What are the other causes of sudden death?

People can die suddenly from causes other than heart attack. Some people may have weakness in the aortic wall that can lead to a split or tear in the aortic lining that can cause sudden death. Massive stroke can also lead to sudden death. People who have a tendency for blood clots formation may develop massive clots that can lodge in the lung blood vessels and cause pulmonary embolus that can rarely cause sudden death. Sometimes, we hear athletes dying suddenly on the field which may be related to hypertrophy or thickening of the heart muscle. Intense adrenaline surge also has been shown to be associated with sudden cardiac death. Certain drugs such as cocaine and others can cause severe coronary artery spasm that can lead to heart attack and sudden death.

Who is at risk for sudden cardiac death?

There are certain conditions that can greatly increase the risk of sudden death. People who had a history of previous heart attack and a heart pumping function of less than 30% (normal pumping function is between 55% to 70%) are at increased risk of developing serious arrhythmias that can lead to sudden death. Hence, people with congestive heart failure or cardiomyopathy are at increased risk. People who also exhibit significant rhythm disturbances such as ventricular tachycardia or fibrillation are also at increased risk of sudden cardiac death. Ironically, sudden death may be the first symptom of a heart disease in some

people. Interestingly, 90% of the people who die suddenly have been found to have 2 or 3 vessel coronary artery disease. That underscores the important relationship between coronary artery disease and sudden cardiac death.

Can we revive a person who had a cardiac arrest?

The most common finding during a cardiac arrest is a serious rhythm disorder such as ventricular tachycardia or fibrillation that ceases the blood circulation. So, the immediate concern during a cardiac arrest is to establish circulation by restoring a normal heart rhythm. If a person is having a ventricular fibrillation, the first step is to initiate cardio pulmonary resuscitation (CPR) by pumping on the chest at a rate of 60 to 80 beats per minute, while someone gets the defibrillator ready. As soon as the defibrillator is available, the heart must be defibrillated to restore normal rhythm.

What are the ABCs of Basic Cardiac Life Support?

If you are in a situation where someone collapses, what do you do? Do not panic. First, yell "Help, someone has a cardiac arrest." Next, shake the person and ask, "Are you OK?" People may pass out for a variety of reasons. If the person had a common faint, as soon as that person hits the floor, that person may be beginning to regain consciousness. If you are familiar with the ABCs of basic life support, you might have a chance to save that person's life.

The letter "A" stands for "Airway." You extend the person's neck to open-up the airway and make sure the tongue is not blocking the airway.

The letter "B" stand for breathing. If the person is not breathing, you deliver two quick breaths using mouth to mouth resuscitation or a mouth piece.

The letter "C" stands for circulation. Now, you try to establish the presence of adequate circulation. We do this by placing the finger tips on the neck, over the carotid artery, to feel for the carotid pulse. If you feel a pulse, determine whether the pulse is strong or weak. If the pulse is very weak, the amount of blood pumped by the heart may not be adequate enough. If you feel the circulation is not adequate and the person appears dusky or blue due to lack of oxygen, begin cardiac compressions. You place the base of your palm over the lower part of the chest, just above the belly, and re-enforce it with the other hand. You compress the chest about an inch with your upper body weight delivering the pressure and force. Continue these chest compressions at a rate of 60 to 80 per minute. After every 15 to 20 compressions, perform a quick pulse check, deliver two breaths and continue with the chest compressions.

What is beyond the basic CPR?

We need to go beyond the basic life support measures in a true cardiac arrest to fully resuscitate a person. The most important thing to address is what caused the cardiac arrest to begin with, namely ventricular fibrillation. That can be treated with the automatic defibrillators. That is one of the reasons that airlines and schools are required to have defibrillators that can be used in times of emergency. Certain drugs are essential in treating slow heart rhythms and preventing recurrent ventricular fibrillation among others.

How do we identify and treat people with increased risk of sudden cardiac death?

The first step is to identify people with risk factors for heart disease, such as high cholesterol, diabetes, hypertension, smoking, and family history of heart disease. They need to undergo thorough cardiac evaluation including echocardiogram, nuclear stress test, and even coronary angiograms if indicated. They need appropriate treatment and follow-up to reduce the risk factors and watch for early signs of heart disease. The treatment options available include medicines for irregular heart rhythms and high cholesterol. Coronary angioplasty, or bypass surgery for critical blockages may be needed.

Persons with heart attacks and poor heart function need special attention. Prophylactic placement of implantable defibrillators (a pacemaker that can defibrillate the heart if there is an irregular rhythm) have been shown to reduce the incidence of sudden cardiac death in this high risk group.

Sudden cardiac deaths can happen to people with no history of heart disease. Hence, the knowledge of basic life support may help you save someone's life. Prompt Cardio Pulmonary Resuscitation (CPR) can double or triple the rate of survival in cardiac arrest victims.

Disclaimer: The Information provided here is for educational purpose only. Please consult with your physician for any medical advice.

Visit www.sugarlandheartcenter.com for a more comprehensive information on heart diseases."

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