

UT News

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September 23, 1987

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*****Arrhythmia Management Center treats patients with life-threatening irregular heartbeats.

DALLAS--They feel like walking time bombs. Patients who survive one near-fatal episode of cardiac arrhythmia (irregular heartbeat) live in dread of the next.

A serious arrhythmia can occur with little warning after the heart's electrical functioning has been altered by a structural defect or heart disease. Life-threatening arrhythmias cause the heart to flutter and lose effectiveness in pumping blood. The result may be loss of blood pressure, loss of consciousness and death.

A few lucky people experience cardiac-related "sudden death" and live to tell about it. Usually, survivors are revived by timely cardiopulmonary resuscitation (CPR) and by an electric shock to the heart through paddles applied to the chest.

But there are also effective preventive measures, both medical and surgical, for staving off premature death from serious arrhythmias. This spectrum of preventive treatments, plus the ability to locate and diagnose the underlying disorder, has spurred the development of a Dallas hospital center for arrhythmia management.

Under the direction of Southwestern Medical School cardiologist Dr. Mark Kremers, the Arrhythmia Management Center at Parkland Memorial Hospital helps physicians manage patients with arrhythmia problems. Some of the center's treatments are standard therapy, but as part of an academic program, patients may benefit from recent advances in the field.

Among the new developments in treating arrhythmias is an implantable device for automatically restoring heart rhythm when arrhythmia begins. Called an automatic internal cardioverter defibrillator (AICD), the device is being implanted by Kremers and Southwestern cardiothoracic surgeon Dr. Lawrence Pass, in patients who meet specific criteria.

The palm-sized AICD unit is surgically placed into the patient's abdominal area, where a generator and two sets of electrodes continuously monitor heart beat. When the AICD device detects excessively rapid heartbeat (tachycardia), it delivers an electrical pulse to the heart to restore a normal rhythm. It acts as a means for stabilizing the heartbeat internally, taking the place of external defibrillation.

Implantation of the AICD is often the final effort in preventing premature death in arrhythmia patients. In less advanced cases, patients often respond to anti-arrhythmic drugs. Kremers is also investigating a newly developed pacemaker that can support the heart when its rhythm gets too slow and can interact when the heartbeat starts to speed.

Surgery is used in some patients to remove specific heart tissue causing arrhythmia problems or to interrupt the heart's faulty electrical pathways.

"Some of these surgical procedures are technically difficult and carry with them an increased risk during surgery," says Pass. "But we are using justifiably high-risk surgery to treat high-risk patients when it significantly lessens their risk of sudden death and improves the quality of their lives."

Kremers explains that the choice of treatment is based on a patient's individual problems.

(More)

Diagnosis of an arrhythmia-causing disorder takes place through electrophysiology (EP) testing. An EP test involves placement of heart catheters, tipped with a temporary pacemaker, into the patient's chest. Doctors can pace the heart and record the activity through electrocardiography (EKG) leads both outside and inside the heart.

Then through the EP catheter, Kremers' team can challenge specific areas of the heart by adding an extra beat to the heart rhythm. In hearts that are damaged and prone to develop tachycardia, this extra beat will usually trigger an arrhythmia.

"What we're doing with EP is inducing life-threatening arrhythmias in high-risk patients in order to evaluate the patient's heart rhythm problems," Kremers says. "Patients actually have episodes where blood pressure and sometimes consciousness are lost. In their living rooms, they might die. The difference is that we're here to revive them."

Besides using the EP catheter to diagnose problems, a therapeutic procedure can be performed with the catheter whereby a small amount of abnormal electrical heart tissue is destroyed with a shock.

Kremers and Pass are the first team to perform sophisticated electrophysiology and EP surgery in Dallas. Kremers trained with EP pioneer Dr. Mark Josephson in Philadelphia. Now Kremers and Pass instruct other cardiologists and surgeons in the use of EP and EP surgery, which are rapidly becoming standard treatments in leading medical centers.

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NOTE: The University of Texas Health Science Center at Dallas comprises Southwestern Medical School, Southwestern Graduate School of Biomedical Sciences and the School of Allied Health Sciences.