

Background – The challenge

Sudden cardiac death

Sudden cardiac arrest is the immediate loss of heart function, breathing and consciousness. This condition usually occurs due to an electrical disturbance in the heart that disrupts the pumping action of the heart. Without treatment, death occurs in minutes, which is called “sudden cardiac death”. Prevention of sudden cardiac death is one of the most challenging issues in medicine. Mainly, in patients with a history of prior heart attack.

Implantable cardioverter defibrillator

The most effective treatment to stop or correct a life-threatening electrical disturbance in the heart or to restore the heart’s beating is using a defibrillator. An implantable cardioverter defibrillator (ICD) is a battery-powered device placed under the skin that keeps track of the heart rate. Thin wires connected the implantable cardioverter defibrillator to the heart. When it detects a very fast, abnormal heart rhythm, it delivers an electric shock (defibrillation) to the heart muscle. This causes the heart to beat in a normal rhythm again. In order to prevent sudden cardiac death, in high risk patients implanting an ICD device is usually recommended by the physicians.

Who needs an Implantable cardioverter defibrillator?

In patients with a prior heart attack, persistent weakness of the heart function is considered a high risk for sudden cardiac death. Heart function is thus measured with an indicator called “ejection fraction”, which refers to how well the heart is pumping. It is the percentage of blood that is pumped out of the heart’s main pumping chamber during each heartbeat. If the ejection fraction is low, meaning 35% or lower, then the patient is at increased risk for sudden cardiac death. Consequently, physicians recommend an “implantable cardioverter defibrillator” for him/her.



Why we need new indications?

Numerous studies have shown that “ejection fraction” alone, cannot be a sufficient marker for detecting high risk patients. Thus, current practice for implantation of the defibrillator has severe limitations. According to the available data, in only few

patients that nowadays receive the defibrillator, will the device ever save the selected patients’ life. On the other side, the majority of cases who die due to sudden cardiac arrest, have a moderate to normal heart's pumping function. Therefore, the scientific community believes that a more accurate indication for defining high risk patients is needed.

