METHOD AND APPARATUS EMPLOYING A SCALING EXPONENT FOR SELECTIVELY DEFIBRILLATING A PATIENT

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Technology description

Background

Ventricular fibrillation (VF) is the most common initial arrhythmia associated with sudden cardiac death, and is one of the most common life-threatening medical conditions that occurs with respect to the human heart. Electrical defibrillation remains the mainstay of therapy for VF. A common treatment for ventricular fibrillation is to apply an electric pulse to the heart that is strong enough to stop the unsynchronized electrical activity and give the heart's natural pacemaker a chance to reinitiate a synchronized rhythm. The current practice of resuscitation relies on visual inspection of the electrocardiogram (ECG) waveform on a monitor. If the caregiver decides that it is appropriate, a defibrillation shock is administered. In many instances, this therapy is ineffective, although no known tool is available to predict a priori when defibrillation will be successful.

Technology

A defibrillator, which selectively delivers a defibrillation pulse to a patient, includes electrodes adapted for placement on the patient, a monitoring circuit for providing an electrocardiogram (ECG) of the patient, and a defibrillation pulse generator having an energy store for delivering a defibrillation pulse. A switch in electrical communication with the ECG monitoring circuit and the defibrillation pulse generator selectively electrically connects the monitoring circuit and the defibrillation pulse generator to the electrodes. A microprocessor is in electrical communication with the monitoring circuit, the defibrillation pulse generator, and the switch. The microprocessor causes the switch to electrically connect the monitoring circuit to the electrodes in order to provide the ECG of the patient. The microprocessor also determines a scaling exponent for the patient from the ECG thereof. The microprocessor further compares the scaling exponent to a predetermined value and selectively causes the switch to electrically connect the defibrillation pulse generator to the electrodes in order that the energy store delivers the defibrillation pulse to the patient.

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