Performance of an automated external cardioverter defibrillator for in-hospital ventricular malignant arrhythmia.

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Purpose
Ventricular fibrillation (VF) and ventricular tachycardia (VT) are the major underlying rhythm during in-hospital cardiac arrest. For a patient in VF/VT the probability of successful defibrillation and subsequent survival to hospital discharge is directly and negatively related to the time interval between onset of the arrhythmia and delivery of the first shock. The data about this interval in clinical practice is heterogeneous and inconclusive, however the literature estimates it to be about 60 seconds in monitored units. Continuous ECG monitoring allows identification of such arrhythmias and alert nursing and medical staff. The time delay between the arrhythmic event and human intervention is still a challenge for clinical practice.

Methods
We reported the use of an automated external cardioverter defibrillator (AECD) in 45 patients considered to be at higher risk for malignant arrhythmia for 24 to 48 hours. The inclusion criteria was acute coronary syndrome, cardiogenic shock and previous episode of sudden death or malignant ventricular arrhythmia. The exclusion criteria was the use of pacemaker or an implantable cardioverter defibrillator and an R-wave amplitude less than 0.7 mV peak to peak at the monitor.

Results
We recorded 17 episodes of VT/VF in 3 patients. The median time between the beginning of the arrhythmia and the first defibrillation was 33.37 s (range 21 to 65 s). The sensitivity and specificity were 100%. The success of the defibrillation was 94.11% (16/17) for the first shock and 100% (1/1) for the second shock. There was no adverse event during the study period and no episodes of inappropriate therapy delivery (the detection was accurate in all episodes -sensitivity 100%).

Conclusion
AECD was safe and effective. It presents the possibility of providing consistently rapid identification and response to ventricular malignant arrhythmia.

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