

# Electrical storm is a potent risk factor for mortality and morbidity

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Electrical storm (ES) is a potent risk factor for mortality and morbidity, according to research presented today, August 26, at the ESC Congress 2012 by Dr Federico Guerra from Italy. Data was also presented on which patients are prone to developing ES and how effective current treatments are.

Sustained ventricular arrhythmias, such as ventricular [tachycardia](#) (VT) or [ventricular fibrillation](#) (VF), are often seen as serious and devastating events, given their ability to lead to [cardiac arrest](#) and death if not treated promptly. Dr Guerra said: "The cluster of three or more of those arrhythmias within a 24 hour timeframe is usually called electrical storm (ES), the most devastating of all arrhythmic complications."

ES is more frequently seen as an acute complication of [myocardial infarction](#) but is not uncommonly related to other [cardiac diseases](#), such as cardiomyopathies, congenital [long QT syndrome](#) and Brugada syndrome. The highest incidence of ES is however reported in patients with an implantable cardioverter defibrillator (ICD). "This incidence, which ranges from 4% to 60%, is mainly due to two factors," said Dr Guerra. "First, ICD can detect the VT or VF underlying a clinical episode of [dizziness](#), syncope or even aborted sudden cardiac death, thus making the diagnosis far easier. Second, and most important, it can effectively treat the first and second VT or VF, thus saving the patient from [sudden cardiac death](#) and making him able to withstand more arrhythmic episodes."

The aim of the study was to collect all the data available regarding ES to see its real impact as a risk factor for death and impaired [quality of life](#). The researchers conducted the largest meta-analysis of ES to date and pooled together 6,979 patients with ICD implantation from 32 different studies. Dr Guerra said: "We sought to investigate whether there are any clues that enable us to predict ES, or at least tell us if some specific types of patients will be more prone to develop ES. Finally, we wanted to check what types of treatments are currently available for ES, and compare them in terms of efficacy and safety."

The researchers found that ES was a strong risk factor for death. Compared to patients with multiple VTs or VFs but no ES, patients with ES were nearly 4 times more likely to die from cardiac causes, and 5 times more likely to experience either cardiovascular death, heart transplantation, or cardiogenic shock. Patients with ES were also 9 times more likely to die from any cause than patients without any previous ventricular arrhythmias.

The researchers also found some specific subgroups of patients in which ES was more frequent. "Patients who had an ICD implanted because they have already experienced a VT or VF have the highest probability of developing ES," said Dr Guerra. "Patients with severe impairment of heart function and disabling symptoms of heart failure are also more prone to ES. And a specific subtype of VT, called monomorphic VT, is frequently followed by other arrhythmic episodes, which often culminates in ES."

When the researchers analyzed available treatments for ES they found that pharmacological treatment was often ineffective for terminating acute episodes or preventing recurrences. But Dr Guerra said: "The ablation of specific zones inside the heart by means of little catheters inserted from a peripheral blood vessel can provide effective termination of ES in nearly 83% of the cases, preventing relapses over the following

years."

"Our work confirmed ES as a potent risk factor for mortality and morbidity," he added. "Even if it is still not possible to predict ES with certainty, our work helped to recognize specific subtypes of patients who are more prone to develop ES. Doctors can use this information to identify which of their patients are at risk of ES and take appropriate preventative measures. We also found that pharmacological therapy performs poorly in ES patients and should be accompanied by catheter ablation whenever possible, especially in a high-risk setting."

Provided by European Society of Cardiology

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