Coronary angioplasty improves cardiac arrest survival

20 October 2012

Coronary angioplasty improves survival in all patients with out of hospital cardiac arrest, according to research presented at the Acute Cardiac Care Congress 2012. The study was presented by Dr Annamaria Nicolino from the Santa Corona General Hospital in Pietra Ligure, Italy.

The Acute Cardiac Care Congress 2012 is the first annual meeting of the newly launched Acute Cardiovascular Care Association (ACCA) of the European Society of Cardiology (ESC). It takes place during 20-22 October in Istanbul, Turkey, at the Istanbul Lufti Kirdar Convention and Exhibition Centre (ICEC).

Out of hospital cardiac arrest is a leading cause of mortality and acute coronary occlusion is the leading cause of cardiac arrest. It is well known that when an electrocardiogram (ECG) shows that a patient has ST elevation, primary angiography must be done as soon as possible. If severe coronary disease is found, coronary angioplasty with percutaneous coronary intervention (PCI) is performed to open the blocked vessel.

But Dr Nicolino said: "There is controversy about what to do when a patient with out of hospital cardiac arrest has a normal ECG that does not show ST elevation. ESC Clinical Practice Guidelines are inconclusive – they say to consider performing coronary angiography but they don't say 'do it' or 'don't do it'."

She added: "Some previous studies have found that if the ECG is normal (no ST elevation) the patient can still have severe coronary disease and therefore needs a coronary angiography, followed by coronary angioplasty, to clear the blocked vessel."

The current study aimed to discover whether performing urgent coronary angiography, and PCI if required, would improve survival in all patients with out of hospital cardiac arrest (both those with ST elevation and those without).

The study included 70 patients who had out of hospital cardiac arrest between 2006 and 2009. Successful urgent coronary angiography and PCI improved hospital survival in all patients with acute coronary syndrome. The treatment increased hospital survival rates in patients with ST elevation myocardial infarction (STEMI) from 51% to 83% (p=0.003) and in non-STEMI (NSTEMI) patients from 55% to 81% (p=0.004).

"In our study, a successful urgent coronary angioplasty improved hospital survival in patients with STEMI and NSTEMI," said Dr Nicolino. "All patients with out of hospital cardiac arrest, if there is no non-cardiac cause, must have an urgent coronary angiography followed by coronary angioplasty if there is coronary disease."

Non-cardiac causes of cardiac arrest which should be ruled out before performing coronary angiography are trauma, brain haemorrhage and metabolic problems such as severe hypoglycaemia.

Dr Nicolino added: "ECG results can be misleading – we found that ECG detected just one-third of acute coronary syndrome in NSTEMI patients. This means that even if the ECG is not showing ST elevation, you cannot rule out an acute coronary syndrome. Coronary angiography should be performed urgently to see if there is any acute coronary disease which needs treatment with PCI."

Post-resuscitation neurologic injury (PNI) was the biggest complication. This can occur if resuscitation is not performed early enough, since the brain's blood supply stops during cardiac arrest. The 32.8% of patients who had PNI were at the greatest risk of death. Early signs of PNI were associated with underuse of coronary angioplasty and PCI.

Provided there was no neurological injury, MI

patients who had angioplasty after cardiac arrest achieved the same one-year survival rates as patients with MI alone.

The first heart rhythm was a ventricular fibrillation (VF) or a ventricular tachycardia (VT) in 62% of patients. Most of these patients had an acute coronary syndrome (STEMI or NSTEMI). The incidence of VF and VT was the same in STEMI and NSTEMI patients. "For many years we have thought that patients with STEMI have a greater arrhythmic risk than NSTEMI patients," said Dr Nicolino. "But we found that both STEMI and NSTEMI patients are at high risk of arrhythmias."

She added: "If the first recorded rhythm is a VF or a VT an acute coronary syndrome is highly probable and it's important to perform a coronary angiography immediately without waiting for a diagnosis of infarction (using an enzyme test)."

Dr Nicolino concluded: "Patients with out of hospital cardiac arrest must be managed by cardiologists, intensive care doctors and anaesthesiologists. This team can save the brain from injury using cooling therapy, and save the heart and life of the patient using coronary angioplasty."

Provided by European Society of Cardiology