Effect of Remote Ischaemic preconditioning on Clinical outcomes in patients undergoing Coronary Artery bypass graft surgery (ERICCA study): a multicentre double-blind randomised controlled clinical trial

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Plain English summary

The ERICCA study

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Plain English summary

Coronary heart disease (CHD) is the leading cause of death in the UK, accounting for 124,000 deaths in 2006 and costing the UK economy over £7.9B per year. Patients with severe CHD are usually treated by an operation called coronary artery bypass graft (CABG) surgery. This operation can carry risks, particularly in sicker patients. New treatment strategies are therefore required to improve the outcome and recovery of these higher-risk patients undergoing CABG surgery.

The ERICCA (Effect of Remote Ischaemic preconditioning on Clinical outcomes in patients undergoing Coronary Artery bypass graft surgery) trial investigated a new method for reducing the damage to the heart muscle during CABG surgery with or without valve surgery. The intervention assessed was remote ischaemic preconditioning (RIPC), which is a low-cost, non-invasive strategy. RIPC consists of placing a blood pressure cuff on the upper arm to temporarily reduce blood flow to the arm. Smaller studies have indicated that reducing the blood flow to the arm for a short period of time can protect internal organs from injury caused by interruption of blood supply, which occurs during major operations such as CABG surgery. The temporary cessation of blood flow to the arm activates a reflex that makes internal organs more resistant to the harmful effects of low blood flow. This reflex is called RIPC.

A total of 1612 patients were recruited from 30 hospitals in the UK. All patients were allocated to receive either RIPC or a 'pretend' procedure (control group). The cuff was inflated continuously on the arm for a 5-minute period and was then deflated for 5 minutes. This was performed four times. The cuff was applied after anaesthetic and before surgery started.

Patients were followed up after 1 year, when information was collected on the primary end point, consisting of a combination of the rate of death, myocardial infarction, stroke and requirement for repeat revascularisation.

We found no difference in the primary end point between patients who received the RIPC intervention and those receiving the intervention simulating RIPC, thereby demonstrating that RIPC provides no additional benefit to patients undergoing CABG surgery with or without valve surgery.

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This report

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