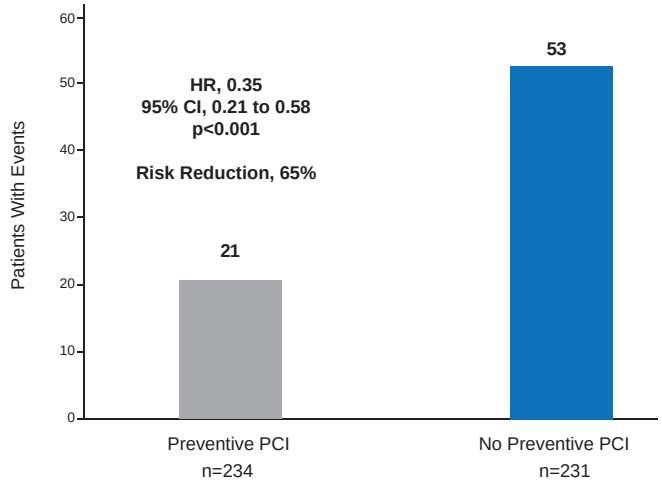
prior coronary artery bypass graft surgery, >50% stenosis in either the left main or ostia of both the left anterior descending and circumflex arteries or if the only noninfarct stenosis was a chronic total occlusion. The patients were randomized after successful emergency PCI to preventive PCI (n=234) or no preventive PCI (n=231) in the noninfarct artery while they were still in the catheterization laboratory. The patients were examined and evaluated with electrocardiography at 6 weeks and annually thereafter.

Baseline characteristics were similar between the two groups. The mean age in both groups was 62 years, 76% were male, and the majority of infarcts involved the inferior wall, with approximately one-third anterior infarcts. The trial was stopped on January 24, 2013, due to a highly significant difference in the primary outcome in favor of preventive PCI (p<0.001).

The mean follow-up was 23 months. Ten patients in the preventive PCI group and 8 in the no preventive PCI group were lost to follow-up. The primary composite outcome occurred in 21 patients in the preventive PCI group (9.0%) and 53 patients in the no preventive PCI group (22.9%), with a risk reduction of 65% in the preventive PCI group (HR, 0.35; 95% CI, 0.21 to 0.58; p<0.001; Figure 1). This translates into an absolute risk reduction of ~14% or a number needed to treat of 7 patients to prevent one primary endpoint event at 1 year.

Figure 1. Cardiac Death, Nonfatal MI or Refractory Angina



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Cardiac death or nonfatal MI occurred in 11 (4.7%) patients in the preventive PCI group and 27 (11.7%) patients in the no preventive PCI group, with a risk reduction of 64% for patients treated with preventive PCI (HR, 0.36; 95% CI, 0.18 to 0.73; p=0.004). This translates into an absolute risk reduction of ~7% or a number needed to treat of 15 patients to prevent one cardiac death or nonfatal MI at 1 year.

Procedure-related complications occurred in 10 patients in the preventive PCI group and 9 patients in the no preventive PCI group, and were composed of contrast nephropathy, bleeding requiring transfusion or surgery, and stroke. However, the trial was not powered to adequately compare the safety of these two strategies.

The results of the PRAMI trial demonstrate that preventive PCI performed in noninfarct arteries immediately after emergency PCI for STEMI provides a substantial cardiac benefit at 1 year. The robust results of this preventive PCI trial in the context of primary STEMI care are counter to current standards of care. Previously, due to uncertainty of the value of preventive PCI, its practice varied among cardiologists. It will be interesting to see whether the next iterations of major cardiovascular guidelines adopt the results of this trial.

Pretreatment Before PCI With Prasugrel Does Not Reduce Ischemic Events in Patients With NSTE-ACS

Written by **Rita Buckley**

Pretreatment with prasugrel at the time of diagnosis of non-ST-segment elevation (NSTE) acute coronary syndromes (ACS), rather than at the time of percutaneous intervention (PCI), did not reduce ischemic events and increased bleeding, according to results from A Comparison of Prasugrel at the Time of Percutaneous Coronary Intervention or as Pretreatment at the Time of Diagnosis in Patients With Non-ST Elevation Myocardial Infarction (NSTEMI) [ACCOAST; NCT01015287; Montalescot G et al. *N Engl J Med* 2013]. Gilles Montalescot, MD, PhD, Centre Hospitalier Universitaire Pitié-Salpêtrière, Paris, France, presented results from the study.

Treatment with prasugrel has been shown to be superior to clopidogrel for reducing ischemic events in patients presenting across the spectrum of ACS intended for interventional treatment; however, treatment was only administered at the time of PCI after angiography was completed [Wiviott SD et al. *N Engl J Med* 2007]. ACCOAST was a randomized, double-blind, event-driven study to evaluate the administration of prasugrel, a P2Y12 antagonist, at the time of diagnosis (pretreatment) compared with after coronary angiography if PCI was indicated as previously studied. A total of 4033 patients with NSTEMI scheduled for catheterization within 2 to 48 hours were randomized.

The primary composite endpoint was the first occurrence of death from cardiovascular causes, MI, stroke, urgent revascularization, or glycoprotein IIB/IIIa inhibitor rescue therapy (glycoprotein IIB/IIIa bailout) through Day 7 [Montalescot G et al. *Am Heart J* 2011]. Safety endpoints were major and minor bleeding risks according to TIMI criteria.

Patients in the pretreatment group received 30 mg of prasugrel at the time of diagnosis and if angiography confirmed an indication for PCI, an additional 30 mg of prasugrel was administered. Patients in the control group received placebo initially and a 60-mg prasugrel dose was administered following angiography in patients for whom PCI was indicated and performed.

From randomization to Day 7, there was no difference in the primary endpoint with prasugrel pretreatment compared with prasugrel after angiography (HR with pretreatment, 1.02; 95% CI, 0.84 to 1.25; p=0.81). However, there was a significant, nearly 2-fold increase in the rate of TIMI major bleeding in patients receiving prasugrel pretreatment (HR, 1.90; 95% CI, 1.19 to 3.02; p=0.006). The rate of life-threatening bleeding unrelated to coronary artery bypass graft was increased by a factor of 6. Among the 69% of patients who underwent PCI, pretreatment with prasugrel reduced death from cardiovascular causes, MI, stroke, urgent revascularization, or glycoprotein IIB/IIIa inhibitor rescue therapy; however, the rate of TIMI major bleeding at 7 days was significantly increased.

Overall, ACCOAST showed an increased risk of bleeding and demonstrated no benefits with prasugrel pretreatment prior to angiography in patients with NSTEMI, and Prof. Montalescot noted that a re-examination of antiplatelet pretreatment strategies in patients with NSTEMI is necessary.

LINC: Manual and Mechanical CPR Produce Equivalent Outcomes

Written by **Rita Buckley**

Effective manual cardiopulmonary resuscitation (CPR) can be difficult to perform. After 2 to 3 minutes of attempting to compress the chest 100 times each minute, only ~20% to 30% of the compressions may achieve the needed depth of 5 to 6 cm. In addition, interruptions in chest compressions (eg, to analyze heart rhythm) are detrimental to re-initiating circulation. The LUCAS system is a piston-driven device with a suction cup (for adequate chest recoil) designed to deliver compressions according to resuscitation guidelines (100 compressions/minute) at a depth of 4 to 5 cm. In contrast to manual CPR (M-CPR), defibrillation can be delivered during LUCAS CPR (L-CPR), to minimize interruptions to compressions.

A Comparison of Conventional Adult Out-of-Hospital Cardiopulmonary Resuscitation Against a Concept With Mechanical Chest Compressions and Simultaneous Defibrillation study [LINC; NCT00609778] presented by Sten Rubertsson, MD, Uppsala University, Uppsala, Sweden, sought to examine the efficacy and safety of the LUCAS device in contrast with M-CPR.

The prospective, multicenter, randomized, controlled LINC study screened ~5000 patients from six European sites who had suffered an out-of-hospital cardiac arrest and needed resuscitation; 2593 were ultimately randomized. Of these, 1300 were randomized to L-CPR and 1289 to M-CPR. Patients in the L-CPR arm received M-CPR until the device could be applied. Baseline characteristics between the L-CPR and M-CPR groups were similar.

The primary endpoint was survival (defined as return of spontaneous circulation [ROSC]) at 4 hours after CPR. The secondary endpoint was survival up to 6 months with a good neurological outcome (defined as cerebral performance category [CPC] 1 or 2). The inclusion criterion was unexpected adult out-of-hospital cardiac arrest where an attempt of resuscitation was considered appropriate. Exclusion criteria were traumatic cardiac arrest, including hanging; age <18 years; known pregnancy; and patient body size not fitting the LUCAS. Those patients who were defibrillated prior to the arrival of LUCAS or those with ventricular fibrillation/ventricular tachycardia that were defibrillated leading to ROSC were also excluded. Prof. Rubertsson noted that these last criteria may have excluded patients most likely to survive for at least 4 hours. Approximately 50% of subjects had asystole and 20% had pulseless electrical activity at randomization in each arm.

There was no difference in the primary outcome of survival at 4 hours (23.6% with L-CPR vs 23.7% with M-CPR; 95% CI, –3.32 to 3.23; p=1.00). The secondary outcomes were similar between groups.

Poor neurologic outcomes, CPC 3 or 4 (excluding those with brain death [CPC 5]) were infrequent in both groups. Rates of poor neurologic outcomes were low after hospital discharge and similar between groups.

The overall results indicate that LUCAS-aided CPR is not superior to manual CPR for 4 hours post CPR survival. Prof. Rubertsson noted that this was a somewhat surprising outcome given the difficulty of M-CPR. Further analyses by initial rhythm, time to CPR, and by whether the arrest was witnessed by the emergency medical services team will be important.

Home-Monitoring Technology Suggests an Improvement in Survival in Heart Failure Patients

Written by **Nicola Parry**

Gerhard Hindricks, MD, University of Leipzig, Heartcenter, Leipzig, Germany, discussed results from the Influence of Home Monitoring on the Clinical Status of Heart Failure Patients With an Impaired Left Ventricular Function trial [IN-TIME; NCT00538356], a randomized controlled