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Available online 21 December 2017

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1885-5857/

Selection of the Best of 2017 on Acute Cardiac Care

Selección de lo mejor del año 2017 en cuidados críticos cardiológicos

To the Editor,

Of the noteworthy studies published this year on the treatment of acute cardiac patients, we would to like to highlight 5 due to their practical impact.

A substudy of the IABP-SHOCK II trial[1] has developed a simple score to predict 30-day mortality in patients in cardiogenic shock, based on 480 patients and with external validation. The variables comprising the model were age, history of stroke, glucose at admission, creatinine at admission, lactate at admission, and TIMI flow grade <3 after PCI. According to the score results, patients were classified into 3 risk groups, with a good correlation (C statistic = 0.74) with short-term mortality (23.8%, 49.2%, and 76.6%, respectively).

Another notable study in patients in cardiogenic shock was performed by Ouweneel et al.[2] This randomized multicenter study in patients with ST-segment elevation acute myocardial infarction (STEMI), orotracheal intubation, and cardiogenic shock compared the Impella CP percutaneous circulatory support device with the intra-aortic balloon pump (IABP). The study included 48 consecutive patients (24 with the Impella CP and 24 with the IABP). There were no differences between the 2 groups in terms of 30-day mortality: 46% in the Impella CP group and 50% in the IABP group (*P* = .92). The patients in the Impella group showed higher rates of major bleeding. A limitation of the study is the high percentage of survivors of cardiac arrest (44 of 48), with brain damage as the primary cause of death, which complicates interpretation of the results.

The TTH48 trial concerned cardiac arrest survivors and hypothermia.[3] This multicenter and randomized study was performed in survivors of a cardiac arrest of presumed cardiologic origin, with a shockable initial rhythm in 88% of patients, and compared 2 therapeutic hypothermia regimens of different durations. Participants received therapeutic hypothermia at 33 °C for either 24 hours (n = 179) or 48 hours (n = 176). There were no differences between the 2 groups in the primary outcome, good neurological outcome (CPC 1-2 at 6 months): 69% in the 48-hour hypothermia group vs 64% in the 24-hour group (*P* = .33). The 48-hour hypothermia group had more adverse events and longer mechanical ventilation times. Accordingly, the effectiveness of therapeutic hypothermia vs normothermia remains unclear.

The "prophylactic" use of levosimendan in patients with significant ventricular dysfunction who undergo cardiac surgery is a recurring debate in clinical practice. The results of the multicenter LEVO-CTS study,[4] performed in patients with ventricular dysfunction (ejection fraction ≤ 35%) and scheduled for cardiac surgery (revascularization or valve surgery) provide valuable information on this subject. Levosimendan before the procedure (n = 442) was compared with placebo (n = 440). The primary outcome was a composite of 30-day mortality, need for renal replacement therapy at 30 days, perioperative acute myocardial infarction at 5 days, and use of mechanical ventilation at 5 days. There were no differences between the 2 groups (24.5% in the levosimendan group vs 24.5% in the placebo group; *P* = .98). The incidences of low cardiac output and the need for inotropic agents were significantly lower in the levosimendan group, without affecting the clinical results of the study. Other publications have explored the use of levosimendan during surgical interventions in these patients; the results were similar and there were no benefits on outcomes vs placebo.[5]

Finally, we would like to highlight the recent DETO2X-SWEDEHEART trial.[6] This randomized multicenter study explored the systematic use of oxygen in patients with acute coronary syndrome and baseline saturation > 90%. An oxygen therapy group (6-12 hours; n = 3311) was compared with an ambient air group (n = 3318). There were no differences in the primary end point of 1-year mortality (5.0% and 5.1%, respectively; *P* = .8) or in the other secondary end points. The power of the study was lower than calculated because the authors expected a higher incidence of mortality in both groups, which might be because 24.4% of the included patients had diseases other than heart disease.

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Available online 6 December 2017

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1885-5857/

Selection of the Best of 2017 in Ischemic Heart Disease

Selección de lo mejor del año 2017 en cardiopatía isquémica

To the Editor,

Here, we summarize 6 salient articles published in 2017 covering various aspects related to ischemic heart disease.

In the area of secondary cardiovascular prevention, there are 3 articles in particular that could prompt significant changes in strategies aimed at reducing long-time risk in patients with ischemic heart disease. First, the FOURIER trial[1] compared the efficacy and safety of evolocumab (a PCSK9 inhibitor) with that of placebo in 27 564 statin-treated patients with atherosclerotic cardiovascular disease and low-density lipoprotein-cholesterol (LDL-C) $\geq$ 70 mg/dL. During follow-up (median, 2.2 years), the group treated with evolocumab experienced a marked drop in LDL-C (median reduction, 30 mg/dL) and a significant decrease in cardiovascular events (9.8% in the evolocumab group vs 11.3% in the placebo group), without differences in severe adverse effects.

The second article analyzed the antithrombotic regimens of patients with chronic ischemic heart disease. The researchers in the COMPASS trial[2] randomized 27 395 patients to rivaroxaban (2.5 mg/12 h) plus aspirin (100 mg/d), rivaroxaban (5 mg/12 h), or aspirin (100 mg/d). The study was prematurely stopped (mean follow-up, 23 months) due to the superiority of rivaroxaban plus aspirin in the reduction of the primary outcome (composite of cardiovascular death, stroke, and myocardial infarction) vs aspirin alone (4.1% vs 5.4%; $P < .001$). Although the combination strategy was accompanied by higher incidence of major bleeding (3.1% vs 1.9%; $P < .001$), there were no significant differences in intracranial or fatal bleeding.

In addition to novelties in the control of risk factors and optimization of antithrombotic therapy, the CANTOS clinical trial[3] has put the focus back on inflammation as a key element in the genesis of residual risk in stable ischemic heart disease. The study evaluated the efficacy and safety of canakinumab (monoclonal antibody inhibitor of interleukin-1) vs placebo in 10 061 patients with previous myocardial infarction and persistent inflammatory activity (elevated C-reactive protein). After a 48-month follow-up, patients treated with subcutaneous canakinumab 150 mg every 3 months had lower incidence of the composite primary end point (cardiovascular death, stroke, and cardiovascular events) than those treated with placebo (3.86 vs 4.50 events per 100 person-years; hazard ratio [HR] = 0.85; 95% confidence interval [95%CI], 0.74-0.98; $P = .021$).

Regarding acute coronary syndromes (ACSs), a noteworthy study examined myocardial infarction screening in patients attending for chest pain. Boeddinghaus et al.[4] compared the 4 validated strategies involving high-sensitivity troponin I (hs-cTnI): limit of detection (hs-cTnI $<$ 2 ng/L), single cutoff point (hs-cTnI $<$ 5 ng/L), 1-hour algorithm (hs-cTnI $<$ 5 ng/L and 1-h change $<$ 2 ng/L), and the 0/1-hour algorithm recommended by the European Society of Cardiology (combination of the limit of detection and the 1-hour algorithm). The authors prospectively included 2828 unselected patients who presented with suspected myocardial infarction. The 4 algorithms showed an adequate diagnostic validity, although the single cutoff point was less sensitive than the other 3 algorithms in early presenters (within 2 hours of symptom onset).

The PROSPERO meta-analysis of non-ST-segment elevation ACS, by Jobs et al.,[5] included 8 clinical trials with 5324 patients randomized to either early or delayed invasive treatment. In the overall analysis, the early invasive strategy failed to improve survival. Nonetheless, this strategy significantly reduced mortality in some prespecified subgroups: those with elevated biomarkers at admission (HR = 0.761; 95%CI, 0.581-0.996), diabetes (HR = 0.67; 95%CI, 0.45-0.99), GRACE score $>$ 140 (HR = 0.70; 95%CI, 0.52-0.95), and age $\geq$ 75 years (HR = 0.65; 95%CI, 0.46-0.93), even if the interactions among these factors failed to show conclusive results in statistical testing.

Regarding ST-segment elevation ACS, in addition to the recent publication of the new European guidelines, whose breadth surpasses the aims of this letter, the COMPARE-ACUTE clinical trial[6] was performed to clarify the benefit of PCI of noninfarct-related coronary arteries in patients with multivessel disease. Accordingly, 885 patients with ST-segment elevation ACS and multivessel disease treated with primary PCI of the infarct-related artery were ran-