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Running, even a little, seems to improve life prognosis.

Lee DC, Pate RR, Lavie CJ, Sui X, Church TS, Blair SN. Leisure-time running reduces all-cause and cardiovascular mortality risk. **J Am Coll Cardiol 2014;64:472-81.**

Many people go running in their spare time considering that this must have a beneficial effect on health. Current guidelines recommend 150 minutes of moderate physical activity or 75 minutes of intense activity per week. However, it is not clear whether shorter times of intense activity are associated with better outcomes.

ACLS is an observational, prospective, cohort study designed to evaluate the effect of physical activity on health status. It incorporates people who undergo periodic preventive medical examinations at a clinic in Dallas, Texas. The analysis presented here included people over 18 years of age who had undergone at least a full medical examination between 1974 and 2002. On the initial examination the participants were asked about their daily physical activity in the past 3 months and, in case of running, the weekly values of time spent on the activity, distance, frequency and speed. Participants were classified in 6 groups: non-runners (those who did not answer to these questions), and 5 quintiles of runners built on the reported values. Physical activity developed in other activities was also considered. Based on the guidelines and the values above, the amount of activity in METS/minute for each participant was obtained. All were objectively evaluated with a stress test. Follow-up continued until death or end of 2003.

The study included 55,137 individuals (26% women) with mean age of 44 years. Running was reported in 23.6% of cases. Compared with non-runners, there was a higher prevalence of men with the following characteristics: they were younger, had lower BMI, smoked less, and more often also performed another type of sports activity. At mean follow-up of 14.7 years, the HR for overall mortality (adjusted for age, sex, risk factors, alcohol consumption, family history and amount of physical activity in other sports) was 0.70 (95% CI 0.64 -0.77) and for cardiovascular mortality 0.55 (95% CI 0.46 to 0.55). No running was associated with three years less life expectancy. Considering 5 quintiles of runners according to the time per week spent in this activity (<51, 51-80, 81-119, 120-175 or > 175 minutes per week) revealed that they all had a better prognosis than non-runners, but there was no difference between them in overall or cardiovascular mortality, i.e. a dose-response relationship could not be demonstrated. The better prognosis associated with running vs. no-running was also seen in the lowest categories of weekly distance (< 9.6 km), speed (< 9.6 km/hour) or frequency (1-2 times per week). A review of 20,647 participants who underwent two examinations in an average of almost 6 years revealed that 65% still remained non-runners, 13% were still runners, 14% had stopped running, whereas 8% had started doing so. Compared with those who had never run, the evolution of the other three groups was better, especially in persistent runners.

This study suggests that lower targets than those recommending intense physical activity are associated with better prognosis, and in this sense it adds to previous observations. Being an observational study, residual confounding cannot be ruled out, meaning that factors not considered in the adjustment could be really accountable for the findings. Possibly, those who run are more concerned with their health, adopting a behavior and care that contribute to a better outcome. It is somewhat remarkable that no additional benefit is derived from more intense or long-lasting activity. Randomized studies may provide stronger evidence. For the moment, and considering that running, especially in older and untrained people, is associated with risk of injury or cardiovascular events when there is no adequate preparation, we can definitely recommend walking, undertaking more intense activity gradually and with medical advice.

Should the use of bilateral internal mammary artery be the standard practice in coronary artery bypass graft surgery?

Yi G, Shine B, Rehman SM, Altman DG, Taggart DP. Effect of bilateral internal mammary artery grafts on long-term survival: a meta-analysis approach. **Circulation 2014;130:539-45. http://doi.org/vp3**

Use of the left internal mammary artery as bridge for the anterior descending artery is a standard practice in the context of coronary artery bypass graft surgery (CABG). The rest of the bridges are generally performed with veins and sometimes a radial artery graft is used. CABG using bilateral internal mammary arteries (BIMA) is not a widespread practice as it is considered by < 10% of European and < 5% of American surgeons. However, a meta-analysis published in 2001 already suggested that the use of BIMA was far superior in terms of survival than the use of a single mammary artery (SIMA). The meta-analysis had a median follow-up of only 4 years. The authors now present data from a new systematic review and meta-analysis with a longer follow-up period.

Nine studies (15,583 patients) published between 1990 and 2012 were analyzed meeting the following criteria: survival comparing CABG with SIMA vs. BIMA, more than 9-year follow-up period and at least 100 patients per group. None of the studies was randomized. In 3 of the studies, patients were matched a priori for comparison; in 5 other studies a propensity score was used to adjust for baseline characteristics and obtain similar patients in both groups. Patients with BIMA had lower mortality, with HR 0.79, 95% CI 0.75-0.84. Six studies reported the incidence of myocardial infarction at follow-up, with favorable results for BIMA in five of them. Four studies reported in-hospital mortality, with higher incidence in the SIMA group in two of them, although the difference was not sustained in multivariate analysis. Two studies reported the incidence of sternal infection, with no difference between SIMA and BIMA. The right internal mammary artery was preferentially used as bridge for the left coronary artery and in only one study the right internal mammary artery was used to systematically revascularize the right coronary artery.

The presumed benefit of BIMA over SIMA may be due to increased long-term permeability, and to the attenuation of coronary disease progression. Greater risk of wound infection, longer operative time, and lack of randomized evidence are considered among the reasons for not using BIMA. The results of this meta-analysis with a longer follow-up period confirm the previous study. Being observational studies, selection, referral and publication biases which may at least partially explain the findings cannot be disregarded and, it is also possible that the correction methods employed do not completely eliminate baseline imbalances affecting evolution. However, the number of patients and longer follow-up call for attention to the results. The ART randomized study of 3102 patients in 8 countries, assessing the superiority of BIMA over SIMA during a 10-year follow-up is currently being performed. Initial data show similar perioperative mortality and outcome at 1-year follow-up with both approaches. Due to the established mechanisms, BIMA requires extensive monitoring to show benefit. The final results of the study are expected in 2018.

The use of digoxin is associated with worse prognosis in patients with atrial fibrillation

Turakhia MP, Santangeli P, Winkelmayer WC, Xu X, Ullal AJ, Than CT, et al. Increased Mortality Associated With Digoxin in Contemporary Patients With Atrial Fibrillation: Findings From the TREAT-AF Study. **J Am Coll Cardiol 2014;64:660-8. http://doi.org/f2th77**

Digoxin (D) is used for the treatment of heart failure (HF) and atrial fibrillation (AF). The randomized DIG study explored its influence on survival in the context of HF. There is no similar study regarding its use in AF.

The TREAT-AF retrospective, cohort study included patients treated in the Department of Veterans health care system, with AF first diagnosed between October 2003 and September 2008. The analysis included ambulatory or hospitalized patients who were first diagnosed with non-valvular AF, were seen in the outpatient clinic, received prescribed medication within 90 days of the initial diagnosis, and whose AF was finally confirmed between 30 and 365 days of the initial diagnosis. Patients with AF diagnosed over the past 4 years, those with thyroid disease, renal transplantation or cardiac surgery within 30 days were excluded from the study. Exposure to D was recorded in the first 90 days of ambulatory follow-up, and the primary endpoint was death at follow-up from 90 days onwards.

A total of 122,465 patients were included in the study (98.4% men), of whom 23.4% received D. Compared to the rest, those treated with D were slightly younger, with higher prevalence of HF and with neurohormonal antagonist, antiplatelet and oral anticoagulation treatment. At mean follow-up of nearly 3 years, patients treated with D evidenced higher mortality (9.5% vs. 6.7% annually, adjusted HR 1.26, 95% CI 1.23 - 1.29, $p < 0.001$). To correct for the imbalance of baseline characteristics a paired analysis of treated and untreated patients was performed, according to a propensity score analysis. Among the 26,703 pairs of patients created, again those treated with D had higher mortality (HR 1.21, 95% CI 1.17 -1.25, $p < 0.001$). Taking into account adherence to treatment and baseline renal function did not change the results. There was a worse prognosis with D independently of sex, age, presence of HF or treatment with other drugs.

The AF clinical practical guidelines still consider D for frequency control with a Class I or IIa indication. Two post hoc analyses of the AFFIRM randomized study (comparing rhythm control vs. frequency control) had shown contradictory results: the one using D was associated with increased mortality whereas the other was not. The results of this cohort study (with the largest number of AF patients exploring this topic) suggest that the recommendation should be revised. It is true that there are study limitations (observational study, almost absolute predominance of men, inclusion of only recently diagnosed AF), but the size of the sample and the internal consistency of the results, similar to different approaches, call for attention. As usual, it is possible that variables not taken into account and strongly associated with the use of D are partially responsible for the findings. Until this issue is clarified (randomized study?) D perhaps should not be systematically considered as first choice in AF therapy.

A revolution in the treatment of heart failure: the PARADIGM study

McMurray JJ, Packer M, Desai AS, Gong J, Lefkowitz MP, Rizkala AR , et al. Angiotensin-neprilysin inhibition versus enalapril in heart failure. **N Engl J Med 2014;371:993-1004.http://doi.org/vp4**

Neprilysin is a neutral endopeptidase that breaks down various endogenous peptides, among them natriuretic peptides, bradykinin and adrenomedullin. The hypothesis that its inhibition in patients with heart failure (HF) would result in improved prognosis is not new: more than 10 years ago the OVERTURE study compared omapatrilat, a neprilysin, angiotensin converting enzyme (ACE) and aminopeptidase P inhibitor, with enalapril (E) in HF patients. The use of omapatrilat did not improve the prognosis and was often associated with angioedema. LCZ696 represents an advance in the same line: it is a sacubitril (neprilysin inhibitor but not ACE or aminopeptidase P inhibitor, decreasing the risk of angioedema) and valsartan compound.

The PARADIGM study compared LCZ696 with E in HF patients in functional class II-IV, left ventricular ejection fraction (LVEF) ≤ 40% (and, after amendment, ≤ 35%) and BNP ≥ 150 pg/mL or NT-proBNP ≥ 600 pg/mL (or, if hospitalization due to HF had occurred in the past year, BNP ≥ 100 pg/mL or NT-proBNP ≥ 400 pg/mL). Patients with symptomatic hypotension or systolic blood pressure < 100 mm Hg, serum potassium > 5.2 mEq/L or glomerular filtratation rate < 30 ml/min/1.73 m2 were excluded from the study. After a screening period, patients underwent a two-week single-blind period in which they received 10 mg E every 12 hours, and if successfully tolerated, this was followed by another single-blind period of 4-6 weeks receiving LCZ696 (100 mg and then 200 mg every 12 hours). Each dose of 200 mg of LCZ696 is equivalent to 160 mg valsartan. Following both periods without hypotension, hyperkalemia or other unacceptable adverse effects, patients were randomly assigned in a 1:1 ratio to LCZ696 200 mg every 12 hours or E 20 mg every 12 hours. The primary endpoint was a composite of cardiovascular death or hospitalization for HF. Secondary endpoints were overall mortality, incidence of atrial fibrillation and significant renal dysfunction.

The study included 8442 patients between 2009 and 2012, and 8399 were finally analyzed. Mean age was 63.8 years, and mean LVEF was 29.5%; 70.5% of patients were in FC II and 24% in FC III. In 93% of cases, patients were treated with betablockers, and in 55.6% with antialdosterone agents. According to previously established criteria, the study was discontinued at the end of March 2014, due to evident LCZ696 superiority in the interim analysis with p <0.001, one-tailed test. Median follow-up was 27 months. The primary end point occurred in 21.8% of cases with LCZ696 and in 26.5% with E (HR 0.80, 95% CI 0.73 - 0.87, p < 0.001). Cardiovascular death occurred in 13.3% vs. 16.5% of cases (HR 0.80, 95% CI 0.71 - 0.89, p < 0.001) and overall mortality in 17% vs. 19.8% (HR 0.84, 95% CI 0.76-0.93, p < 0.001). Hospitalization for HF occurred in 12.8% vs. 15.6% of cases (HR 0.79, 95% CI 0.71-0.89, p < 0.001). Symptomatic hypotension was more frequent with LCZ696, but there were less elevated creatinine values ≥ 2.5 mg%, hyperkalemia or cough.

The PARADIGM study represents a real progress in the field of HF with low LVEF medical treatment, being the most important since the RALES study. For the first time since then, a clear effect in the reduction of mortality with a pharmacological intervention is demonstrated. For nearly 30 years the use of ACE inhibitors was a Class I indication and standard of quality of care in the context of HF with low LVEF. LCZ696, representing a new family of drugs, has proved to be superior in a well-designed, clearly ambitious study, with patients similar to those of other trials. The most thorough publication of baseline characteristics and evolution allows venturing hypotheses about the mechanisms responsible for the findings. The role of neprilysisn seems to be particularly important in the physiopathological interpretation of HF. Is it ACE's swan song? Reasons that go beyond pathophysiology and that include market forces, cost and availability, will be involved in the answer.

Systemic inflammatory disorders and risk of coronary heart disease, stroke or type 2 diabetes

Dregan A, Charlton J, Chowienczyk P, Gulliford MC. Chronic inflammatory disorders and risk of type 2 diabetes mellitus, coronary heart disease, and stroke: a population-based cohort study. **Circulation 2014;130:837-44. http://doi.org/vp5**

Different observational studies have suggested the association of systemic inflammatory disorders with major incidence of vascular events and diabetes. Heterogeneous designs and a sometimes reduced number of observations prevent a definite conclusion on this subject. A cohort study of patients sampled from a primary care database of Great Britain contributes to shed light on this problem. Patients with inflammatory disease diagnosed between 2002 and 2013, free from type 2 diabetes and history of cardiovascular events at the time of inclusion entered the study.

Cases included patients with severe psoriasis (5,648), mild psoriasis (85,232), bullous skin disorders (4,284), Crohn´s disease (7,628), ulcerative colitis (12,203), inflammatory arthritis (27,358), autoimmune disease (7,472) and systemic vasculitis (6,283). Overall, 156,108 cases of inflammatory disorders and 373,851 controls without inflammatory disorders were matched by age, sex and practice. There were baseline differences depending on the disease (more women with autoimmune disorders, hypertension and corticoid prescription in vasculitis and obesity in psoriasis). The incidence of endpoint outcomes was greater for inflammatory disorders: 7.42‰ for diabetes, 5.12‰ for coronary disease and 2.67‰ for stroke vs. 5.32‰, 4.06‰ and 2.15‰, respectively, in control cases. Systemic vasculitis, bullous skin disorders and inflammatory arthritis presented with the greatest incidence of events; Crohn´s disease had the best outcome. After adjusting for age, sex, vascular risk fac-

tors (except diabetes), renal function and concomitant treatment, diabetes was independently associated with psoriasis, ulcerative colitis and systemic vasculitis; coronary heart disease with bullous disorders, autoimmune diseases and vasculitis, and stroke with all inflammatory disorders except Crohn´s disease and systemic autoimmune disorders.

These data confirm the association (it cannot be considered causality) between inflammatory disorders and vascular disease and diabetes, suggesting a dose-response relationship (greater risk in more severe psoriasis and in patients with higher C reactive protein levels). One limitation is that the severity of all diseases was not considered. Inherent biases to observational studies, such as selection and recollection should also be mentioned. Nevertheless, the study sheds light on mechanisms related to the development of vascular disease and strengthens the association with chronic inflammatory phenomena.

How is sodium and potassium intake associated to event outcome: the PURE study

O'Donnell M, Mente A, Rangarajan S, et al. Urinary sodium and potassium excretion, mortality, and cardiovascular events. **N Engl J Med 2014;371:612-23.**

Although it is clear that sodium intake positively correlates with blood pressure (BP) in population studies, and that societies with lower sodium intake have lower BP levels, it is not so evident that this is unequivocally and linearly associated with the incidence of death and cardiovascular events. There is even evidence reporting worse outcome in populations with daily sodium intake < 3 compared with those consuming between 3 and 6 g.

The epidemiological PURE cohort study included 156,424 subjects, 35 to 70 years of age, residing in 628 urban and rural communities in 17 countries (among them Argentina). The substudy presented here included 101,945 participants, in whom a fasting urine sample was collected in the morning. The Kawasaki formula was used to estimate 24-hour excretion of sodium and potassium and that estimate was considered as surrogate of their daily intake. Sodium and potassium association with the incidence of death and cardiovascular events was explored using a model adjusted for age, sex, educational level, Asian or non-Asian origin, smoking, alcohol consumption, diabetes, body mass index, history of cardiovascular events, and additionally, LDL/HDL relationship. Another model also included caloric and fruit and vegetable intake. A third model incorporated history of hypertension, antihypertensive treatment and systolic BP in addition to the variables involved in the other two models.

Mean follow-up was 3.7 years, mean daily sodium excretion 4.93 g and that of potassium 2.2 g. Compared with a daily reference sodium excretion of 4-5.99 g, an estimated excretion ≥ 7 g was associated with higher number of deaths and cardiovascular events (OR 1.15, 95% CI 1.02-1.30), all-cause mortality (OR 1.25, 95% CI 1.07-1.48), death from cardiovascular events (OR 1.54, 95% CI 1.21-1.95) and severe stroke (OR 1.29, 95% CI 1.02-1.63). There was interaction with the presence of hypertension: high sodium excretion had prognostic value in hypertensive patients, whereas there was no association with those without hypertension. Following adjustment for hypertension, only the association with all-cause mortality preserved statistical significance. Also, an estimated excretion < 3 g was associated with excessive risk of death and cardiovascular events (OR 1.27, 95% CI 1.12-1.44), all-cause mortality (OR 1.38, 95% CI 1.15-1.66), death from cardiovascular events (OR 1.77, 95% CI 1.36-2.31) and severe stroke (OR 1.37, 95% CI 1.07-1.76). In this case, after adjusting for BP levels, all the associations preserved statistical significance. Additional analyses were performed excluding patients with history of cardiovascular events, cancer or events in the first 2 follow-up years to avoid the risk of inverse causality, without changes in the mentioned tendencies.

Regarding the daily reference potassium excretion (< 1.5 g), progressively higher values were associated with significantly decreased incidence of events, especially due to reduced risk of death.

The results from this large cohort study contribute to explain the association between sodium and potassium intake and prognosis. The relationship of high sodium intake with events is mediated by increased BP. The association between low sodium consumption with adverse outcome, independently of BP, involves other phenomena (sympathetic and renin-angiotensin system activation?). It is clear that the linear relationship between sodium intake and BP does not imply, in turn, linear association with events: the J –shaped curve shows the multiple responses involved, and how the pathophysiology rarely runs through predictable pathways. The improved prognosis obtained with increased potassium consumption seems to be associated with its effects on BP or reflect healthier habits. However, it should be pointed out that these data are not definitive. They arise from an observational study, in which sodium intake is not randomly assigned; thus, populations with different baseline intake are compared, which beyond the adjustments performed, may reflect differences effectively responsible of findings not taken into account. Further randomized studies will have to be performed to achieve this certainty.

J-shaped curve for the relationship between blood pressure and mortality and renal failure

Sim JJ, Shi J, Kovesdy CP, Kalantar-Zadeh K, Jacobsen SJ. Impact of achieved blood pressures on mortality risk and end-stage renal disease among a large, diverse hypertension population. **J Am Coll Cardiol 2014;64:588-97. http://doi.org/f2tf3g**

Although it is clear that lowering blood pressure improves prognosis in patients suffering from hyperten-

sion (HT), there is still discrepancy about the blood pressure (BP) levels that should be pursued as objective. In hypertensive patients with associated pathologies as diabetes or chronic renal failure, an aggressive BP decrease has not been shown to be beneficial for the outcome, and it has even been associated with greater rate of events. A retrospective cohort analysis of the Permanent Kaiser, a Californian health organization, seems to confirm these assumptions.

It included patients diagnosed with HT, identified during 2006-2007 and followed-up until the end of 2010, with documented hypertensive treatment and BP at each visit. It excluded patients with heart failure, dialysis or renal transplant. Average ambulatory BP was measured for each patient. The primary endpoint was the composite of death and end-stage renal failure (need for dialysis or transplantation). The relationship between systolic BP (in 10 mm Hg intervals, from < 110 to ≥ 170) and diastolic BP (in 10 mm Hg intervals, from < 50 to ≥ 100) with events was made considering as reference categories 130-139 mm Hg for systolic BP and 80-89 mm Hg for diastolic BP.

The study incorporated 398,419 treated hypertensive patients (80% with diuretics, 70% with converting enzyme inhibitors, 44% with betablockers), with mean age 64 years, 55% women and 30% diabetics. Mean BP was 131/73 mm Hg. In a median follow-up period of 4.5 years, the composite endpoint occurred in 7.3% of cases. Compared to patients with 130-139 mm Hg systolic BP (5.6% endpoint incidence), risk was progressively greater at higher intervals (always with $p < 0.001$), with adjusted HR (by age, sex, ethnicity, body mass index, diabetes, renal failure and comorbidities) from 1.44 for those with systolic BP of 140-149 mm Hg up to 4.91 for those with systolic BP ≥ 170 mmHg. A similar response was obtained with lower values: adjusted HR from 1.12 for those with systolic BP between 120-129 mmHg, up to 4.10 for systolic BP < 110 mmHg. The composite endpoint was repeated for mortality; conversely, end-stage renal failure progressively increased at higher reference intervals, but showed scarce oscillations at lower intervals.

Considering 80-89 mm Hg as the diastolic BP reference category (where incidence was 5.6%), event risk was progressively greater at higher intervals (always with $p < 0.001$), with adjusted HR of 1.56 for those with diastolic BP between 90-99 mm Hg and 3.30 for those with diastolic BP ≥100 mm Hg. On the other hand, lower values between 60 and 70 mm Hg were associated with a lower HR compared to reference, and risk increased for those patients with diastolic BP between 50 and 59 mm Hg and those with values < 50 mmHg (adjusted HR 1.24 and 2.54, respectively).

Further analysis revealed that optimal values with the lowest risk for the composite endpoint were 137/71 mm Hg; these optimal values were lower in diabetic (131/69 mm Hg) than in non-diabetic patients (142/73 mm Hg), and were different in patients < 70 years (131/76 mm Hg) compared to older ones (140/70 mm Hg).

The evidence shown in this retrospective study refers to hypertensive treated patients, not to the general population. Due to its observational nature it is subject to biases. It is possible that a greater disease burden is responsible for lower BP levels, and not the reverse (inverse causality). The correction of this phenomenon was attempted by excluding from the analysis BP values taken 60 days before death, but this correction may not be complete. Also, the influence of treatment is not clear. Beyond the different properties of each drug, it is possible that sick patients receive more frequently BP-lowering drug combinations (e.g. betablockers and angiotensin-converting enzyme inhibitors in cases with history of myocardial infarction or ventricular dysfunction). Although not conclusive, the observations of this study shed light on treatment objectives that should be sought, and agree with JNC 8 recommendations: BP values below 140/90 mm Hg in patients younger than 60 years and 150/90 in older ones.

Factors associated with better surgical than medical treatment results in the STICH study

Panza JA, Velazquez EJ, She L, et al. Extent of coronary and myocardial disease and benefit from surgical revascularization in LV dysfunction. **J Am Coll Cardiol 2014;64:553-61**.

The STICH study attempted to answer a series of doubts associated with coronary artery bypass graft surgery (CABG) in patients with ischemic left ventricular dysfunction. It included patients with coronary artery disease amenable to revascularization due to adequate compartments and left ventricular ejection fraction (LVEF) < 35%. One of the hypotheses tested in the study was that in these patients CABG plus optimal medical therapy (OMT) is better than OMT alone. In this study branch, 602 patients received OPM and 610 OMT plus CABG. Average age was 60 years, most of the patients were men, almost 80% had previous infarction, 40% were diabetic, 37% heart failure patients were in FC III-IV and the rest in FC I-II. Median LVEF was 26.7%, median end-systolic volume index (ESVI) was 78.6 ml/m2 and 60% had 3-vessel coronary artery disease (3VD). The median follow-up interval of 56 months showed a trend but no significant difference in mortality between both strategies: 41 % with OMT, 36% with CABG ($p = 0.12$). Thirty-day mortality was higher in the CABG group and only after 2 years this group evidenced a significant benefit, decreasing cardiovascular death from 33% to 28%, at the significance limit. Other secondary endpoints as the composite of all-cause mortality or hospitalization for heart failure also showed clear benefit with surgery. Several voices were raised against the study results pointing out the difficulty of incorporating patients, shedding doubt on the external validity of results, as well as the passage of patients between both strategies (17% passed from the OMT to

the CABG group and 9% from the CABG to the OMT group without undergoing surgery), which could have attenuated possible differences.

The post hoc analysis was aimed at defining whether a sub-population clearly receives better benefit from CABG. It focused on three factors: 3VD, and LVEF and ESVI, dichotomized in their respective median value. Presence of 3VD, LVEF below and ESVI above the median value was considered in patients who were divided according to the presence of 0-1 vs. 2-3 factors. In patients with 3VD, CABG significantly decreased overall and cardiovascular death, a result that did not occur with less extensive disease. CABG provided significantly better benefit than OMT in patients with LVEF below median, but not with higher LVEF. Lastly, CABG showed a tendency to reduce overall mortality in patients with ESVI above median, with no effect on cardiovascular death, but evidenced no effect in patients with lower ESVI. In patients with presence of 0-1 prognostic factors CABG did not reduce overall or cardiovascular mortality compared with OMT, but afforded benefit in those with 2-3 factors (HR 0.71 and 0.72 for overall and cardiovascular death, both significant). Despite a more adverse anatomy, patients with 2-3 factors assigned to CABG had a similar perioperative mortality (around 3.6%) than those with 0-1 factors, but after 2 years, these patients showed significant prognostic improvement compared to OMT, a result not found in patients with 0-1 factors.

The results of the STICH analysis are intuitively believable. They seem to confirm what we think: patients with more advanced and extended coronary disease and ventricular dysfunction receive greater benefit from CABG. It must be born in mind, however, that this is a retrospective analysis, in which the cut-off values of LVEF and ESVI are obtained after the study, not being prospectively defined. All the conclusions that can be inferred from the results originate from a study with the shortcomings pointed out at the beginning. After this study, the individual decision seems to be the best option.