

Contempo 2005:
Le malattie dell'anziano
Gardone Riviera (BS), 28-29/4/2005

CARDIOLOGIA INTERVENTISTICA NELL'ANZIANO

Niccolò Marchionni

Dipartimento di Area Critica Medico Chirurgica
Unità Funzionale di Gerontologia e Geriatria
Università di Firenze

Riferimenti bibliografici

- (1) **Keeley EC, Grines CL. Primary coronary intervention for acute myocardial infarction (A).** JAMA 2004; 291:736-739.
- (2) **DeSilvey DL. Percutaneous interventions in the elderly: lessons from two recent trials (G).** Am J Geriatr Cardiol 2004; 13:47.
- (3) **Halon DA, Adawi S, Dobrecky-Mery I, Lewis BS. Importance of increasing age on the presentation and outcome of acute coronary syndromes in elderly patients (G).** J Am Coll Cardiol 2004; 43:346-352.
Abstract: OBJECTIVES: The study examined differences in presentation and outcome between elderly (> or =70 years) and very elderly (> or =80 years) patients hospitalized for acute coronary syndromes (ACS). BACKGROUND: The elderly constitute an increasingly important sector of patients with ACS but have been underrepresented in many therapeutic trials. METHODS: We compiled a registry of 449 consecutive patients, 251 elderly (70 to 79 years) (septuagenarians, group 1) and 198 very elderly (> or =80 years) (group 2), to examine outcomes in relation to baseline characteristics and treatment. We recorded survival over a period of 24 +/- 4 months and rehospitalization and symptomatic status at 16 +/- 4 months. RESULTS: At index hospitalization, the older cohort (group 2) more often had acute myocardial infarction (35% vs. 9.7%, $p < 0.0001$), heart failure (33.3% vs. 19.4%, $p < 0.001$), and renal dysfunction (21.6% vs. 12.3%, $p = 0.01$). They were less likely to undergo coronary angiography (29.3% vs. 43.8%, $p = 0.002$), but those selected for angiography more often underwent revascularization so that revascularization rates were similar (22.7% group 2 vs. 24.3% group 1, $p = \text{NS}$). Two-year survival rate was poorer in group 2 (67.4 +/- 3.5% vs. 83.5 +/- 2.5% in group 1, $p < 0.0001$). Repeat rehospitalization was similar (53.0% vs. 48.2%, respectively, $p = 0.31$), but improvement in well-being of survivors was greater (60.0% vs. 46.3%, $p = 0.01$). CONCLUSIONS: The study demonstrated important differences between elderly (70 to 79 years) and very elderly (> or =80 years) patients hospitalized with ACS. The older cohort was sicker on admission and had poorer outcome, but a subgroup selected for angiography and possible intervention had two-year outcomes similar to the younger cohort.

- (4) **Barchielli A, Buiatti E, Balzi D, Santoro GM, Carrabba N, Fabiani P et al. Age-related changes in treatment strategies for acute myocardial infarction: a population-based study (A).** J Am Geriatr Soc 2004; 52:1355-1360.

Abstract: OBJECTIVES: To compare across four age groups (<65, 65-74, 75-84, > or =85) the determinants of coronary reperfusion therapy (CRT) use in ST-segment elevation acute myocardial infarction (STE-AMI). DESIGN: Population-based, observational study. SETTING: Performed in the health district of Florence, Italy, where percutaneous coronary intervention (PCI) is the preferred CRT. PARTICIPANTS: Nine hundred thirty patients with STE-AMI prospectively enrolled in the Florence AMI registry. MEASUREMENTS: Use of CRT, clinical factors associated with CRT use. RESULTS: CRT use was reduced from 71% at younger than 65 to 31% at aged 85 and older ($P < .001$). After adjusting for chronic comorbidity, Killip class, admission hospital category, hospitalization delay, and AMI location, CRT use was 29% ($P = .17$) lower at age 75 to 84 and 63% ($P < .001$) lower at age 85 and older than at younger than 65. Within each age group, the probability of receiving CRT was three to five times greater in patients directly admitted to the hospital with PCI facilities. Acute cardiac failure and chronic comorbidity were associated with lower CRT use only in patients aged 65 and older. Patients aged less than 85 years who received reperfusion therapy had a significantly lower risk of death (-44%, $P = .045$) at 1 year, whereas it was less evident and nonsignificant (-27%, $P = .27$) in patients aged 85 and older. CONCLUSION: Results confirm that, although they might substantially benefit from CRT during STE-AMI, older patients are excluded from CRT even when eligible. This further indicates that clinicians are not yet completely prepared to manage most efficiently frail elderly with AMI, a task requiring a specific interdisciplinary training program in geriatric cardiology.

- (5) **Bach RG, Cannon CP, Weintraub WS, DiBattiste PM, Demopoulos LA, Anderson HV et al. The effect of routine, early invasive management on outcome for elderly patients with non-ST-segment elevation acute coronary syndromes (A).** Ann Intern Med 2004; 141:186-195.

Abstract: BACKGROUND: Although increasing age is an important risk factor for adverse outcome among patients with acute coronary syndromes, elderly patients are more often managed conservatively. OBJECTIVE: To examine outcome according to age and management strategy for patients with unstable angina and non-ST-segment elevation myocardial infarction (MI). DESIGN: Randomized, controlled trial conducted from December 1997 to June 2000. SETTING: 169 community and tertiary care hospitals in 9 countries. PATIENTS: 2220 patients hospitalized with unstable angina and non-ST-segment elevation MI who were randomly assigned to an early invasive or conservative management strategy. Interventions: Medical therapy and coronary angiography at 4 to 48 hours versus medical therapy and pre-discharge exercise testing. MEASUREMENTS: Rates of 30-day and 6-month mortality, nonfatal MI, rehospitalization, stroke, and hemorrhagic complications. RESULTS: Among patients 65 years of age and older, the early invasive strategy compared with the conservative strategy yielded an absolute reduction of 4.8 percentage points (8.8% vs. 13.6%; $P = 0.018$) and a relative reduction of 39% in death or MI at 6 months. Outcomes of the 2 strategies were similar, however, among patients younger than 65 years of age (6.1% vs. 6.5%; $P > 0.2$). Among patients older than 75 years of age, the early invasive strategy conferred an absolute reduction of 10.8 percentage points (10.8% vs. 21.6%; $P = 0.016$) and a relative reduction of 56% in death or MI at 6 months. The additional cost per death or MI prevented with the early invasive strategy was lower for elderly patients, but major bleeding rates were higher with

this strategy in patients older than 75 years of age (16.6% vs. 6.5%; P = 0.009).
LIMITATIONS: Because this study involved patients in the Treat Angina with Aggrastat and Determine Cost of Therapy with an Invasive or Conservative Strategy-Thrombolysis in Myocardial Infarction (TACTICS-TIMI) 18 trial, its generalizability to elderly patients with excluded comorbid conditions is unknown. CONCLUSION: Despite an increased risk for major bleeding in patients older than 75 years of age, a routine early invasive strategy can significantly improve ischemic outcomes in elderly patients with unstable angina and non-ST-segment elevation MI.

- (6) **Bhatt DL, Roe MT, Peterson ED, Li Y, Chen AY, Harrington RA et al. Utilization of early invasive management strategies for high-risk patients with non-ST-segment elevation acute coronary syndromes: results from the CRUSADE Quality Improvement Initiative (A).** JAMA 2004; 292:2096-2104.

Abstract: CONTEXT: The American College of Cardiology/American Heart Association (ACC/AHA) guidelines for the management of non-ST-segment elevation acute coronary syndromes (NSTEMI/ACS) recommend early invasive management for high-risk patients, given the benefits with this approach demonstrated in randomized clinical trials. OBJECTIVES: To determine the use and predictors of early invasive management strategies (cardiac catheterization <48 hours following presentation) in high-risk patients with NSTEMI/ACS and to examine the association of early invasive management with mortality. DESIGN, SETTING, AND PATIENTS: The CRUSADE (Can Rapid Risk Stratification of Unstable Angina Patients Suppress Adverse Outcomes With Early Implementation of the ACC/AHA Guidelines) Quality Improvement Initiative evaluated care patterns and outcomes for 17,926 high-risk NSTEMI/ACS patients (positive cardiac markers and/or ischemic electrocardiographic changes) based on ACC/AHA guidelines recommendations at 248 US hospitals with catheterization and revascularization facilities between March 2000 and September 2002. MAIN OUTCOME MEASURES: Use of early invasive management within 48 hours of presentation, predictors of early invasive management, and in-hospital mortality. Results Of the 17,926 patients analyzed, 8037 (44.8%) underwent early cardiac catheterization less than 48 hours following presentation. Predictors of early invasive management included cardiology care, younger age, lack of prior or current congestive heart failure, lack of renal insufficiency, ischemic electrocardiographic changes, positive cardiac markers, white race, and male sex. Patients treated with early invasive management were more likely to be treated with medications and interventions recommended by the ACC/AHA guidelines and had a lower risk of in-hospital mortality after adjusting for differences in clinical characteristics and after comparing propensity-matched pairs (2.5% vs 3.7%, P<.001). Conclusions An early invasive management strategy is not utilized in the majority of high-risk patients with NSTEMI/ACS. This strategy appears to be reserved for patients without significant comorbidities and those cared for by cardiologists and is associated with a lower risk of in-hospital mortality.

- (7) **Leoncini M, Maioli M, Bellandi F, Galvani M, Ottani F, Toso A et al. Therapeutic strategies, immediate and mid-term outcomes in non-ST-segment elevation acute coronary syndromes with respect to age: a single-center registry of 488 consecutive patients (A).** Clin Cardiol 2004; 27:475-479.

Abstract: BACKGROUND: Elderly patients with non-ST-elevation acute coronary syndromes (NSTEMI-ACS) may receive benefit from an early invasive strategy. However, aged patients often suffer from comorbidities that may contraindicate an invasive

approach and affect prognosis adversely. The impact of comorbidities on an invasive approach to NSTEMI-ACS in the elderly has not been fully investigated. HYPOTHESIS: This study sought to examine the outcome of an unselected population of patients with NSTEMI-ACS stratified according to age and treatment approach. METHODS: The feasibility and efficacy of an invasive strategy for NSTEMI-ACS and the 6-month outcome were assessed in 253 unselected consecutive patients ≥ 70 years (elderly) and compared with those of 235 unselected consecutive patients < 70 years. RESULTS: Angiography was not performed in 69 patients (86% ≥ 70 years) because of contraindications. In the whole population, the 6-month event rate was significantly higher in elderly compared with younger patients (22 vs. 14%; odds ratio 1.8, 95% confidence interval 1.1-2.9; $p < 0.02$). This difference was driven by the high event rate observed in the elderly with contraindications to angiography (47 vs. 16% in the elderly treated invasively; $p < 0.002$). On the other hand, no significant difference was observed in the 6-month event rate between elderly and younger patients undergoing an invasive approach (16 vs. 13%; $p = 0.36$). Contraindications to angiography—namely, creatinine ≥ 1.5 mg/dl and elevated troponin I at admission—were the only independent predictors of 6-month outcome. CONCLUSIONS: The invasive approach was feasible in 77% of patients ≥ 70 years. Those with contraindications to angiography showed a poor mid-term prognosis. The early invasive strategy was associated with more favorable outcomes regardless of age.

(8) Pfisterer M. Long-term outcome in elderly patients with chronic angina managed invasively versus by optimized medical therapy: four-year follow-up of the randomized Trial of Invasive versus Medical therapy in Elderly patients (TIME) (G). Circulation 2004; 110:1213-1218.

Abstract: BACKGROUND: There are no prospective trial data on long-term outcomes in 80-year-old patients with chronic angina with regard to antiischemic therapy. METHODS AND RESULTS: To assess long-term survival and quality of life (QoL) in patients from the Trial of Invasive versus Medical Therapy in the Elderly (TIME), all 276 1-year survivors (of a total 301 patients) were contacted after a median of 3.1 years (range, 1.1 to 5.9 years). At baseline, patients were 80 ± 4 years old, 42% were women, and they were designated as being in angina class 3.2 ± 0.7 , despite their taking 2.5 ± 0.7 antiischemic drugs. Patients were randomized to an invasive ($n=153$) or an optimized medical ($n=148$) strategy. Survival of invasive-strategy versus medical-strategy patients was 91.5% versus 95.9% after 6 months, 89.5% versus 93.9% after 1 year, and 70.6% versus 73.0% after 4.1 years ($P=NS$). Mortality was independently increased in patients ≥ 80 years of age, with prior heart failure, ejection fraction ≤ 0.45 , and ≥ 2 comorbidities, and without revascularization within the first year. Revascularization within the first year improved survival in invasive-strategy ($P=0.07$) and medical-strategy ($P<0.001$) patients. The early benefit of both treatments in angina relief and QoL was maintained long term, but freedom from major events remained higher in invasive-strategy versus medical-strategy patients (39% versus 20%, $P<0.0001$). CONCLUSIONS: Long-term survival was similar for patients assigned to invasive and medical treatment. The benefits of both treatments in angina relief and improvement in QoL were maintained, but nonfatal events occurred more frequently in patients assigned to medical treatment. Irrespective of whether patients were catheterized initially or only after drug therapy failure, their survival rates were better if they were revascularized within the first year.

- (9) **Kuster GM, Pfisterer ME. Care of elderly patients with chronic symptomatic coronary artery disease: is it TIME to be more offensive? (G).** Prog Cardiovasc Nurs 2004; 19:102-106.
 Abstract: Young patients with coronary artery disease usually benefit from revascularization in terms of symptom relief and outcome. There are no prospective data available, however, for patients older than age 75 years, for whom quality of life might be more of an issue than quantity of life and for whom risk profiles and comorbidities make treating physicians more reluctant to prescribe an invasive procedure. The recently published Trial of Invasive vs. Medical therapy in Elderly patients (TIME) was the first to address patients > or =75 years of age with chronic angina despite standard medical therapy. The authors discuss the benefits and risks of interventional vs. medical management of chronic, symptomatic coronary artery disease in elderly patients in view of the TIME results and their clinical implications.
- (10) **Kaiser C, Kuster GM, Erne P, Amann W, Naegeli B, Osswald S et al. Risks and benefits of optimised medical and revascularisation therapy in elderly patients with angina--on-treatment analysis of the TIME trial (G).** Eur Heart J 2004; 25:1036-1042.
 Abstract: AIM: To assess treatment effects of optimised medical therapy and PCI or CABG surgery on one-year outcome in patients 75 years old with chronic angina. METHODS AND RESULTS: On-treatment analysis of the TIME data: all re-vascularised patients (REVASC n=174: 112 randomised to revascularisation and 62 to drugs with late revascularisation) were compared to all patients on continued drug therapy (MED n=127: 86 randomised to drugs and 41 to revascularisation only). Baseline characteristics of both groups were similar (age 80 +/- 4 years). Risk of death at one year (adjusted hazard ratio (HR)=1.31; 95%-CI: 0.58-2.99; P=0.52) and of death/infarction (adjusted hazard RATIO=1.77; 95%-CI 0.91-3.41; P=0.09) were comparable between REVASC and MED patients. Furthermore, the risk of death within 30 days was even slightly lower among REVASC patients (unadjusted hazard RATIO=0.73; 95%-CI: 0.21-2.53; P=0.98). Overall, REVASC patients had greater improvements in symptoms and well-being than MED patients (P<0.01). Surgical patients had similar mortality rates as angioplasty patients, but they also had greater symptomatic improvements (P<0.01). CONCLUSION: Treated medically, elderly patients with chronic angina have a similarly high 30-day and one-year mortality as patients of the same age being re-vascularised; however, they can expect lower improvements in symptoms and well being.
- (11) **Claude J, Schindler C, Kuster GM, Schwenkglenks M, Szucs T, Buser P et al. Cost-effectiveness of invasive versus medical management of elderly patients with chronic symptomatic coronary artery disease. Findings of the randomized trial of invasive versus medical therapy in elderly patients with chronic angina (TIME) (G).** Eur Heart J 2004; 25:2195-2203.
 Abstract: AIM: To compare benefits and costs of invasive versus medical management in elderly patients with chronic angina. METHODS AND RESULTS: In a predefined subgroup of 188 patients of the Trial of Invasive versus Medical therapy in Elderly patients with chronic angina (TIME), one-year benefits were assessed as freedom from major events and improvements in symptoms and quality of life. Costs were determined as one-year costs of resource utilisation. Invasive patients had higher 30-day, but lower months 2-12 hospital and intervention costs than medical patients, resulting in somewhat higher one-year costs for invasive management (p=0.08). However, billing data available for a subgroup of patients showed higher practitioner's charges in the medical patients

(adjusted $p=0.0015$). Incremental costs to prevent one major event by invasive management averaged CHF 10100 (95% CI: -800 to 28300) or 6965, ranging from average CHF 5100 (euro 3515) to CHF 11600 (euro 8000) in a best, compared to a worst, case scenario. CONCLUSIONS: Early increased costs of revascularization in invasive patients were balanced after one year by increased practitioners' charges and symptom-driven late revascularizations in medical patients. Therefore, the invasive strategy with improved clinical effectiveness at only marginally higher costs as medical management was cost-effective. Costs should not be an argument against invasive management of elderly patients with chronic angina.

- (12) **Sanborn TA, Feldman T. Management strategies for cardiogenic shock (I).** *Curr Opin Cardiol* 2004; 19:608-612.

Abstract: PURPOSE OF REVIEW: Cardiogenic shock remains the most serious complication of acute MI, with an incidence of 6 to 8% and a 30-day mortality rate that remains close to 50%. While cardiogenic shock is due primarily to left ventricular failure, other causes such as acute mitral regurgitation and ventricular septal rupture must always be considered as emergency surgery may be life saving. The purpose of this review is to summarize recent advances in the care of these critically ill patients including the consideration of etiology and pathophysiology as well as the influence of age and adjunctive therapies. RECENT FINDINGS: Early revascularization is now an American College of Cardiology/American Heart Association guideline class 1 indication for percutaneous coronary intervention (PCI) particularly for younger patients in cardiogenic shock. Recent studies suggest there may also be a benefit in elderly patients with cardiogenic shock. SUMMARY: Prompt triage of all patients in cardiogenic shock for early angiography, intra-aortic balloon pump counterpulsation, and early revascularization with PCI or bypass surgery is now the preferred management strategy.

- (13) **Sakurai K, Suzuki T, Nakazawa A, Okado T, Sugiura T, Ikeda K et al. Coronary stenting in an elderly patient with an acute myocardial infarction at left main trunk (G - case report).** *Am J Med Sci* 2004; 327:94-97.

Abstract: Acute myocardial infarction (AMI) caused by an occlusion of the left main trunk (LMT) is a rare angiographic finding. The prognosis is usually extremely poor, particularly in an elderly patient, unless complete reperfusion is rapidly established. We experienced a survival case of an elderly man with AMI at the LMT. A 91-year-old man with cardiogenic shock was referred to our hospital for the treatment of AMI. Left ventriculograms showed that akinesis in the anterolateral and apical wall segments had resulted in an ejection fraction of 30.8%. Coronary angiograms revealed a 90% narrowing at the ostium of the LMT. Intravascular ultrasound images showed a circumferential calcification at the site of the minimum lumen diameter of the LMT. We successfully dilated this calcified narrowing using a coronary stent, and the patient was discharged without complications 1 month later. The patient was asymptomatic 6 months later.

- (14) **Zavala-Alarcon E, Cecena F, Ashar R, Patel R, Van Poppel S, Carlson R. Safety of elective--including "high risk"--percutaneous coronary interventions without on-site cardiac surgery (I).** *Am Heart J* 2004; 148:676-683.

Abstract: BACKGROUND: Current guidelines (American College of Cardiology/American Heart Association) for percutaneous coronary intervention (PCI) limit the performance of elective cases to hospitals with the capability for cardiac surgery. The number of hospitals in the United States with this capability is limited, which restricts availability of this proven

technology. OBJECTIVE: To determine the safety of performing elective, nonselected PCI in hospitals without cardiac surgery capability. DESIGN, SETTING, AND PATIENTS: A single-center retrospective analysis of the first 1000 patients undergoing elective, including "high-risk," PCI in the county hospital in Phoenix, Arizona. MAIN OUTCOME MEASURES: A database (Access Microsoft Windows) was established to follow patient characteristics, indications for the procedure, technical aspects of the procedure, outcomes and complications. The Quality Improvement Committee followed each case closely to independently assess the adequacy of indications and patient management, with a monthly case review of every patient who had a periprocedural or postprocedural complication. RESULTS: Failure to complete target vessel revascularization occurred in 68 of the total 1756 vessels (3.8%). Seven patients (0.7%), required elective referral for coronary artery bypass graft surgery after failed PCI. Coronary perforations occurred in 9 patients (0.9%); all resolved with percutaneous techniques. Postprocedure myocardial infarction was diagnosed in 21 patients (2.1%). Two patients (0.2%) developed a stroke. Periprocedural death (within 48 hours of the procedure) occurred in 2 patients (0.2%). Out of the 1000 interventions performed, none required emergency coronary artery bypass graft surgery. CONCLUSIONS: Technical advances in interventional cardiology allow for safe performance of PCI in hospitals without on-site cardiac surgery facilities if proposed conditions are met. Our results together with the vast experience in other countries supports a paradigm change that would increase the number of hospitals that can offer interventional cardiology procedures with a corresponding increase in the number of patients that would benefit