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ABSTRACTS

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Radial artery bypass grafts are associated with increased occurrence of angiographically severe stenosis and occlusion compared with left internal mammary artery and saphenous vein grafts

Khot UN, Friedman DT, Pettersson OL, et al. Circulation 2004;109:2086-91.

Conclusion: Patients who have undergone previous coronary artery bypass grafting who have signs and symptoms of myocardial ischemia have lower patency rates of radial artery grafts compared to internal mammary artery and saphenous vein grafts.

Summary: The authors reviewed coronary angiography procedures at their institution from February 1996 to October 2001. Patients with radial artery bypass grafts were selected. Angiographic outcomes were divided into 3 groups: occluded, severe disease (>70% stenosis), and patent (<70% stenosis). Multivariable analysis was used to determine predictors of severe disease or occlusion.

There were 310 patients with radial artery grafts. Mean follow-up after coronary artery bypass grafting was 565 ± 511 days. Radial artery grafts had a patency rate of 51.3%. This was significantly lower than left internal mammary artery grafts (90.3%; $P < .0001$) or saphenous vein grafts (84.0%; $P = .0016$). Revision rate in radial artery grafts was 33.7%, compared with 4.8% for left internal mammary artery grafts ($P < .0001$). Radial artery grafts had a severe stenosis rate of 15.1%, compared with 5.9% for saphenous vein grafts ($P = .0002$) and 4.8% for left internal mammary artery grafts ($P = <.0001$). Radial artery graft patency was worse in women than in men (38.9% vs 56.1%; $P = .025$). The most powerful multivariable predictor of severe stenosis or occlusion was a radial artery graft ($\chi^2 = 28.82$; $P = <.0001$). The presence of a radial artery graft led to 58 patients requiring subsequent percutaneous interventions and 26 patients requiring repeat coronary artery bypass grafting.

Comment: These results are in significant contrast to the widespread belief that radial artery grafts have a high rate of patency in coronary artery bypass grafting. The data suggest that improvements in harvesting techniques of radial artery grafting and the postoperative administration of calcium channel blockers delayed rather than prevented the previously documented poor outcome of radial artery grafts in the coronary circulation.

A simple but useful method of screening for mesenteric ischemia secondary to acute aortic dissection

Curimoto Y, Morishita K, Fukada J, et al. Surgery 2004;136:42-6.

Conclusion: Measuring the superior mesenteric vein to superior mesenteric artery diameter ratio (SMV-SMA ratio) with computed tomography scanning is a useful screening method for detection of mesenteric ischemia in patients with acute aortic dissection.

Summary: The authors sought to develop a screening method to detect mesenteric ischemia after acute aortic dissection. From 1991 to 2002, 245 patients with acute aortic dissection were admitted to the authors' hospital; in 3.7% of patients (n = 9) the condition was complicated by mesenteric ischemia. Data analysis was retrospective. The authors determined the SMV-SMA ratio in the 9 patients with mesenteric ischemia compared with those patients without mesenteric ischemia. Hematologic test data, including results of arterial blood gas analysis, were also compared between patients with or without mesenteric ischemia.

The SMV-SMA ratio in the group with mesenteric ischemia was 1.16 ± 0.33, and in the group without mesenteric ischemia was 1.78 ± 1.29. ($P < .003$). A cutoff value for the SMV-SMA ratio of 1.5 predicted mesenteric ischemia with 89% sensitivity and 89% specificity, with an odds ratio of 64.0. Patients with and without mesenteric ischemia differed with respect to glutamate oxaloacetate transaminase, lactate dehydrogenase, creatinine phosphate kinase, pH, and lactate values. Measurement of lactate was especially useful ($P < .002$).

Comment: In essence, the authors suggest that mesenteric venous volume, as measured by computed tomography scan–derived measurement of SMV diameter, is an indicator of adequate intestinal perfusion. It makes sense that if less blood is being returned from the mesenteric circulation less blood must have been delivered to the mesenteric circulation. The study is too small to justify using its conclusions to influence clinical practice. It is, however, intriguing, basically makes sense, and the information required is routinely available in patients with aortic dissection.

Statin therapy improves cardiovascular outcome in patients with peripheral arterial disease

Schilinger M, Exner M, Mlekusch W, et al. Eur Heart J 2004;25:742-8.

Conclusion: In patients with severe peripheral arterial disease (PAD) and high C-reactive protein (CRP) activity, statin therapy is associated with substantially improved intermediate-term survival.

Summary: This was a prospective study of 515 patients with severe PAD (296 men; median age, 70 years). Cardiovascular risk profile and laboratory parameters of inflammation (CRP, serum amyloid A, fibrinogen, serum albumin, neutrophil count) were obtained. Patients were followed up for a mean of 21 months (interquartile range, 12-15 months). End points were myocardial infarction and death.

There were 198 myocardial infarctions (5 fatal) and 65 deaths. At 6, 12, and 24 months cumulative survival rate was 97%, 95%, and 89%, respectively, and event-free survival rate (freedom from death and myocardial infarction) was 96%, 93%, and 87%, respectively. Fifty-two percent of patients (n = 269) received statin therapy. Patients given statin drugs had lower levels of CRP ($P < .001$), serum amyloid A ($P < .001$), fibrinogen ($P < .007$), and albumin ($P < .001$); lower neutrophil count ($P = .049$); and better survival (hazard ratio [HR], 0.52; $P = .022$) and event-free survival rates (HR, 0.48; $P < .004$), compared with patients not given statin drugs. Patients with low inflammatory activity (CRP, 0.42 mg/dL) had no benefit from statin therapy in terms of myocardial infarction or survival ($P = .74$ for survival; $P = .83$ for event-free survival). Patients with high CRP (>0.42 mg/dL) and given statin drugs had a significantly reduced risk for mortality (HR, 0.58; $P = .046$) and the composite of myocardial infarction and death (HR, 0.46; $P = .016$).

Comment: It has become increasingly clear that statin therapy is associated with improved survival in patients with PAD. The study suggests that CRP levels may be used to select patients with PAD who may most benefit from statin therapy. These results are consistent with previously documented benefits of statin therapy on levels of inflammatory markers associated with cardiovascular disease and the association of inflammatory markers for cardiovascular disease with long-term survival.

Folate therapy and in-stent stenosis after coronary stenting

Lang H, Suryapranata H, DeLuca G, et al. N Engl J Med 2005;350:2673-81.

Conclusion: Administration of folate, vitamin B_6, and vitamin B_{12} after coronary stenting appears to increase the risk for in-stent recurrent stenosis and the need for target vessel revascularization.

Summary: There have been conflicting data regarding homocysteine levels and risk for recurrent stenosis after coronary angioplasty. A previous study found a decreased rate of coronary recurrent stenosis after lowering plasma homocysteine levels in patients who underwent percutaneous coronary interventions, primarily angioplasty without stenting (N Engl J Med 2001;345:1593-1600). The current study evaluated the efficacy of vitamin therapy in prevention of recurrent stenosis in patients undergoing coronary angioplasty and stenting.

A total of 636 patients who had undergone successful coronary stenting were randomly assigned to receive 1 mg of folic acid, 5 mg of vitamin B_6, and 1 mg of vitamin B_{12} intravenously, followed with daily oral doses of 1.2 mg of folic acid, 48 mg of vitamin B_6, and 60 μg of vitamin B_{12} for 6 months, or to receive placebo. End points were angiographic minimal lumen diameter, recurrent stenosis, and late luminal loss. End points were assessed at 6 months with quantitative coronary angiography.

At follow-up the main (±SD) minimal lumen diameter was smaller in the vitamin group than the placebo group: 1.59 ± 0.62 mL versus 1.74 ± 0.64 mm ($P = .008$). The extent of late luminal loss was greater in the vitamin group than in the placebo group: 0.9 ± 0.55 mm versus 0.76 ± 0.58 mm ($P > .004$). Recurrent stenosis was also higher in the vitamin group than in the placebo group: 34.5% versus 26.5% ($P < .05$). A higher percentage of patients in the vitamin group required repeat target vessel revascularization: 15.8% versus 10.6% ($P < .05$). Vitamin therapy had an adverse effect on risk for recurrent stenosis in all subgroups except for women, patients with diabetes, and patients with markedly elevated homocysteine levels (>15 μm/L) at baseline.

Comment: This study indicates that vitamin therapy should not be administered routinely in patients undergoing coronary artery stenting. Drug-eluting stents were not used in this trial, and no conclusions can be drawn with respect to vitamin therapy and drug-eluting stents. The low need for repeat target vessel revascularization after coronary artery stenting in patients with drug-eluting stents suggests that vitamin therapy in these patients may not be an issue.