

View updated [Privacy Policy](#), effective April 1, 2011

- [Medscape](#)
- [eMedicine](#)
- [Medscape Education](#)
- [Medscape Connect](#)
- [Find a Physician...](#)

[Medscape](#) [CME](#) [eMedicine](#) [Drugs](#) [MEDLINE](#) [All](#)

J Rueda
[Account Settings](#) | [Log Out](#) | [Newsletters](#)

[BROWSE SPECIALTIES](#)

CE TRACKER >>>
 0 Earned Credits.

From [Medscape Cardiology](#)

FACIT: Results From the Folate After Coronary Intervention Trial

Luis Gruberg, MD, FACC

[Authors and Disclosures](#)

Posted: 04/07/2003; Updated: 03/31/2003

[Print This](#) [Email this](#)

Supported by an unrestricted educational grant from:



[Contents of This Activity](#)

[Information](#)

Presenter: Helmut W. Lange, MD, on behalf of the FACIT Investigators

Folate and vitamins B₆ and B₁₂ are very important for the metabolism of homocysteine. Lower levels of folate have been associated with increased serum homocysteine levels, which in turn have been shown to increase smooth muscle cell proliferation, collagen deposition, platelet activation, thrombus formation, lipid peroxidation, endothelial damage, and endothelial dysfunction. As shown in a series of observational studies, all these are important components of coronary artery disease. A recent study by Schnyder and colleagues,^[1] known as "The Swiss Heart Study," showed that combination folate, vitamin B₆, and vitamin B₁₂ therapy for 6 months after percutaneous coronary intervention (PCI) in a study population of 205 patients decreased restenosis rates from 37.6% to 19.6%. It is important to remember that only 50% of these patients were treated with stents, and the greatest benefit of the therapy was seen in patients treated with plain balloon angioplasty.

Trial Design

FACIT (Folate After Coronary Intervention Trial) -- a multicenter, placebo-controlled, randomized study performed in Germany and The Netherlands -- assessed the efficacy of a vitamin combination (ie, folate, B₆, and B₁₂) in lowering serum homocysteine and preventing in-stent restenosis after stent implantation in coronary arteries. The study evaluated a total of 636 patients who underwent elective stent implantation for coronary artery disease. Patients in the treatment arm (n = 316) received an IV bolus of the vitamin combination at the completion of the procedure and then orally (folate 1.2 mg, vitamin B₆ 48 mg, and vitamin B₁₂ 0.06 mg) daily for 6 months. Patients with in-stent restenosis were excluded from the study as were patients with bifurcation lesions, recent myocardial infarction (MI) (< 48 hours), or chronic renal insufficiency, and patients who used multivitamins on a regular basis. At 6 months, minimal lumen diameter was measured by angiography (primary endpoint). The study's secondary endpoint included major adverse cardiac events (MACE), defined as a composite of cardiovascular death and MI and target lesion revascularization (TLR) by either PCI or coronary artery bypass graft surgery.

Results

Baseline characteristics were well matched between the 2 groups (Table 1). Baseline homocysteine levels were also similar, but at 4-week follow-up, a significant reduction in serum levels was already observed in the folate group compared with placebo that was subsequently maintained at 6-month follow-up (*P* < .001).

Table 1. FACIT: Baseline Clinical Characteristics

| | Folate (n = 316) | Control (n = 320) |
|---|------------------|-------------------|
| Age (yrs) | 62 | 61 |
| Male gender (%) | 76 | 78 |
| Diabetes (%) | 17 | 13 |
| Smoker (%) | 30 | 34 |
| Prior MI (%) | 35 | 38 |
| Previous CABG (%) | 5 | 7 |
| Cholesterol | 198 | 197 |
| LDL (mg/dL) | 130 | 130 |
| HDL (mg/dL) | 43 | 42 |
| Triglycerides (mg/dL) | 139 | 139 |
| Homocysteine (micromol/L) baseline | 12.2 | 12.9 |
| Homocysteine (micromol/L) at 4 weeks* | 8.7 | 13.7 |
| Homocysteine (micromol/L) at follow-up* | 9.0 | 13.3 |

CABG = coronary artery bypass graft; HDL = high-density lipoprotein; LDL = low-density lipoprotein; MI = myocardial infarction

**P* < .001

Angiographic follow-up at 6 months favored the control group, revealing a significantly smaller minimal lumen diameter in patients randomized to folate treatment (*P* = .008), with an increase in late loss and in late-loss index (Table 2).

Furthermore, binary restenosis rates were higher in the folate arm (Figure).

Table 2. FACIT: 6-Month Angiographic Follow-up

| | Folate (n = 264) | Control (n = 257) | P |
|-----------------------------|------------------|-------------------|------|
| Minimal lumen diameter (mm) | 1.59 | 1.74 | .008 |
| Late loss (mm) | 0.90 | 0.76 | .004 |
| Late-loss index | 0.61 | 0.51 | .001 |
| Restenosis rate (%) | 34.5 | 26.5 | .047 |

Clinical events at 250 days were similar, with the exception of the MACE rate (ie, death, MI, TLR), which was higher in the folate arm of the study (Table 3; Figure).

Table 3. FACIT: Clinical Events at 250-Day Follow-up

| | Folate (n = 316) | Control (n = 320) | P |
|-------------------------------------|------------------|-------------------|------|
| Death (%) | 0.3 | 0.3 | NS |
| Myocardial infarction (%) | 0.9 | 0.6 | NS |
| Target lesion revascularization (%) | 15.8 | 10.6 | 0.05 |
| MACE (%) | 16.8 | 10.9 | 0.03 |

MACE = major adverse cardiac events

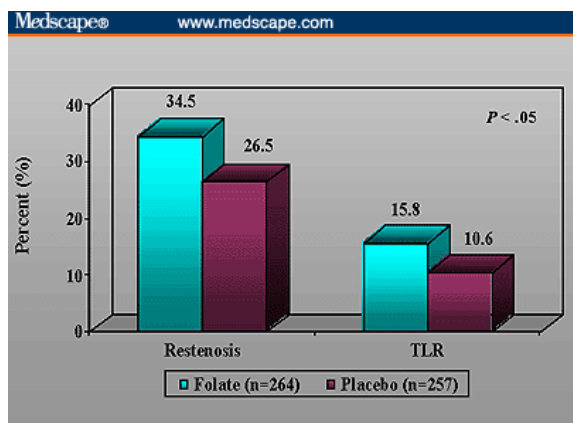


Figure. FACIT: Restenosis and TLR rates.

Multivariate analysis, including diabetes, lesion length, reference vessel diameter, folate treatment, and homocysteine levels, were all found to be independent predictors of restenosis.

Conclusions

FACIT investigators concluded that the combination of folate, vitamin B₆, and vitamin B₁₂ for the reduction of homocysteine had a detrimental effect on the prevention of restenosis after stent implantation for the treatment of coronary artery disease. They recommended that folate therapy not be initiated in patients undergoing stent implantation. However, they cautioned that no definitive conclusions can be drawn from the present study regarding the role of folate for the secondary prevention of coronary artery disease or for the prevention of restenosis in patients who undergo only balloon angioplasty.

Editorial Comments

After the publication of the Swiss Heart Study in *The New England Journal of Medicine*,^[1] the results seemed straightforward: after performing PCI, folate should be given to the patient to lower homocysteine levels and restenosis rates. It appears that clinicians may now need to revise their clinical recommendations. Certainly, these findings are indicative of the fact that it is not so simple to prevent restenosis (as we well know).

This well-designed study has shown that combination folate plus vitamin B is not effective in the prevention of restenosis, and has also shown that the vitamin combination might have a detrimental effect in patients who undergo PCI with stents. The exact roles that homocysteine and folate play after stenting will need further study.

Reference

1. Schnyder G, Roffi M, Pin R, et al. Decreased rate of coronary restenosis after lowering of plasma homocysteine levels. *N Engl J Med*. 2001;345:1593-1600.

Contents of Selected Session Coverage of the American College of Cardiology 52nd Annual Scientific Session

1. OctoStent: A Randomized Comparison of Stent Implantation and Off-pump Bypass Surgery in Patients Referred for Coronary Angioplasty
2. BRITe II: A Multicenter Randomized Study of a Novel 32P Deployable Balloon System for the Treatment of

In-stent Restenosis

3. ARChER: Acculink for Revascularization of Carotids in High-Risk Patients. Preliminary 30-Day Results
4. Cost-Effectiveness of Sirolimus Drug-Eluting Stents for Treatment of Complex Coronary Stenoses: Results From the SIRIUS Trial
5. 12-Month Clinical Follow-up of the TAXUS II Paclitaxel-Eluting Stent Study
6. SPORTIF III: Stroke Prevention Using Oral Thrombin Inhibitor in Atrial Fibrillation
7. Reduction in Acute Myocardial Infarctions After the Implementation of a Comprehensive Smoke-free Ordinance
8. DELIVER: A Randomized Comparison of Paclitaxel-Coated Versus Metallic Stents for Treatment of Coronary Lesions
9. Glycoprotein IIb/IIIa Inhibition With Abciximab in Patients Undergoing Coronary Stenting After Pretreatment With a High Loading Dose of Clopidogrel
10. **FACTIT: Results From the Folate After Coronary Intervention Trial**
11. SIRIUS: 1 Year Clinical Follow-up
12. SIRIUS: Quantitative Intravascular Ultrasound Analysis of Late Incomplete Stent Apposition
13. Two-Year Follow-up of the RAVEL Study Evaluating the Role of Sirolimus-eluting Stents for the Treatment of Patients With De Novo Native Coronary Artery Lesions
14. ACC AMI GAP: American College of Cardiology Acute Myocardial Infarction Guidelines Applied in Practice
15. Bifurcational Coronary Artery Lesion Treatment With Rapamycin-Eluting Stents: Results From a Single Center Experience
16. ISR-II Registry: Treatment of In-Stent Restenosis Using Sirolimus-Eluting Stents
17. The Impact of Sirolimus-Eluting Stents in Diabetics: Results From the SIRIUS Trial
18. RESEARCH Registry: Sirolimus-Eluting Stents for Treatment of In-Stent Restenosis in the Real World -- Preliminary Results
19. Aortic Valve Calcification: From Early Thought to Current Practice

 Print This  Email this

Medscape Cardiology © 2003 Medscape, LLC

[Medscape](#) [CME](#) [eMedicine](#) [Drugs](#) [MEDLINE](#) [All](#)

[About Medscape Education](#) | [Privacy Policy](#) | [Terms of Use](#) | [WebMD Health](#) | [WebMD Corporate](#) | [Help](#) | [Contact Us](#) |

All material on this website is protected by copyright, Copyright © 1994-2011 by Medscape, LLC. This website also contains material copyrighted by 3rd parties.