

Practicability and Limitations of Enhanced External Counterpulsation as an Additional Treatment for Angina

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Summary

Background: An increasing number of clinical studies indicates reduction of angina and myocardial ischemia by enhanced external counterpulsation (EECP) therapy. However, given the wide range of contraindications and the long duration of treatment, eligibility and practicality issues have not been addressed systematically.

Hypothesis: Of all candidates for EECP (patients with drug-refractory angina without possibility of revascularization), the majority either have contraindications or have practical problems complying with the time demands that this therapy imposes. In the rest, EECP leads to satisfactory results.

Methods: During 18 months, every consecutive patient with angina despite medical and interventional therapy was evaluated for EECP at one center. Treated patients underwent a bicycle exercise test and perfusion imaging before and after the standard course of 35 h of EECP. In addition, patients were asked about frequency of angina and nitroglycerin usage before and after EECP, and all patients filled out a final questionnaire 1 year after the end of therapy.

Results: Overall, 48 patients were considered candidates for EECP. Of these, 24 were excluded for medical reasons: poor ejection fraction (4), peripheral artery disease (4), anticoagulation (4), and atrial fibrillation (3). Eight further patients declined EECP for lack of time or accommodation. Another 3 of the 16 remaining patients dropped out because of side effects. In the 13 patients who finished the treatment course, weekly anginal episodes were reduced by 48% ($p < 0.05$), on-demand nitroglycerin puffs were reduced by 51% ($p < 0.05$), work capacity was improved by 22% ($p < 0.05$), and the number of reversible perfusion defects in perfusion scans decreased nonsignificantly (–28%). However, 4 of 13 treated patients determined 1 year later that the detriment of loss of time exceeded the benefits of EECP.

Conclusion: Similar to previous reports, our study confirms the reduction of angina and improvement of work capacity after EECP. However, using established contraindications, approximately two-thirds of patients considered to be candidates had to be excluded, and one-third of the treated patients regarded EECP therapy retrospectively as too time consuming.

Key words: enhanced external counterpulsation, angina, working capacity, contraindications

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