Low-Dose Transdermal Testosterone Therapy Improves Angina Threshold in Men With Chronic Stable Angina: A Randomized, Double-Blind, Placebo-Controlled Study

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Background—Experimental studies suggest that androgens induce coronary vasodilatation. We performed this pilot project to examine the clinical effects of long-term low-dose androgens in men with angina.

Methods and Results—Forty-six men with stable angina completed a 2-week, single-blind placebo run-in, followed by double-blind randomization to 5 mg testosterone daily by transdermal patch or matching placebo for 12 weeks, in addition to their current medication. Time to 1-mm ST-segment depression on treadmill exercise testing and hormone levels were measured and quality of life was assessed by SF-36 at baseline and after 4 and 12 weeks of treatment. Active treatment resulted in a 2-fold increase in androgen levels and an increase in time to 1-mm ST-segment depression from (mean±SEM) 309±627 seconds at baseline to 343±626 seconds after 4 weeks and to 361±622 seconds after 12 weeks. This change was statistically significant compared with that seen in the placebo group (from 266±625 seconds at baseline to 284±623 seconds after 4 weeks and to 292±624 seconds after 12 weeks; \( P < 0.02 \) between the 2 groups by ANCOVA). The magnitude of the response was greater in those with lower baseline levels of bioavailable testosterone (\( r = 0.455, P < 0.05 \)). There were no significant changes in prostate specific antigen, hemoglobin, lipids, or coagulation profiles during the study. There were significant improvements in pain perception (\( P = 0.026 \)) and role limitation resulting from physical problems (\( P = 0.024 \)) in the testosterone-treated group.


Key Words: testosterone ÷ hormones ÷ angina ÷ ischemia