

Heart 2004;**90**:871-876 doi:10.1136/hrt.2003.021121

Cardiovascular medicine

Testosterone replacement in hypogonadal men with angina improves ischaemic threshold and quality of life

C J Malkin¹, P J Pugh¹, P D Morris¹, K E Kerry², R D Jones², T H Jones^{2,*}, K S Channer¹

+ Author Affiliations

Correspondence to:

Dr K S Channer

M131, Cardiology, Royal Hallamshire Hospital, Glossop Road, Sheffield S10 2JF, UK; email: kevin.channer@sth.nhs.uk

Accepted 13 November 2003

Abstract

Background: Low serum testosterone is associated with several cardiovascular risk factors including dyslipidaemia, adverse clotting profiles, obesity, and insulin resistance. Testosterone has been reported to improve symptoms of angina and delay time to ischaemic threshold in unselected men with coronary disease.

Objective: This randomised single blind placebo controlled crossover study compared testosterone replacement therapy (Sustanon 100) with placebo in 10 men with ischaemic heart disease and hypogonadism.

Results: Baseline total testosterone and bioavailable testosterone were respectively 4.2 (0.5) nmol/l and 1.7 (0.4) nmol/l. After a month of testosterone, delta value analysis between testosterone and placebo phase showed that mean (SD) trough testosterone concentrations increased significantly by 4.8 (6.6) nmol/l (total testosterone) ($p = 0.05$) and 3.8 (4.5) nmol/l (bioavailable testosterone) ($p = 0.025$), time to 1 mm ST segment depression assessed by Bruce protocol exercise treadmill testing increased by 74 (54) seconds ($p = 0.002$), and mood scores assessed with validated questionnaires all improved. Compared with placebo, testosterone therapy was also associated with a significant reduction of total cholesterol and serum tumour necrosis factor α with delta values of -0.41 (0.54) mmol/l ($p = 0.04$) and -1.8 (2.4) pg/ml ($p = 0.05$) respectively.

Conclusion: Testosterone replacement therapy in hypogonadal men delays time to ischaemia, improves mood, and is associated with potentially beneficial reductions of total cholesterol and serum tumour necrosis factor α .

Articles citing this article

A potential relationship between diffuse musculoskeletal pain and hypogonadism

BMJ Case Reports 2010;**2010**:bcr0820092152

[\[Abstract\]](#) [\[Full text\]](#)

The Dark Side of Testosterone Deficiency: III. Cardiovascular Disease

J Androl 2009;**30**:477-494

[\[Abstract\]](#) [\[Full text\]](#) [\[PDF\]](#)

Long-term benefits of testosterone replacement therapy on angina threshold and atheroma in men

Eur J Endocrinol 2009; **161**:443-449

[\[Abstract\]](#) [\[Full text\]](#) [\[PDF\]](#)

State of the Art Reviews: Male Menopause: Fact or Fiction?

AMERICAN JOURNAL OF LIFESTYLE MEDICINE 2008; **2**:132-141

[\[Abstract\]](#) [\[PDF\]](#)

Testosterone and Cardiovascular Risk in Men: A Systematic Review and Meta-analysis of Randomized Placebo-Controlled Trials

Mayo Clin Proc. 2007; **82**:29-39

[\[Abstract\]](#) [\[Full text\]](#) [\[PDF\]](#)

Modifying muscle mass - the endocrine perspective.

J Endocrinol 2006; **191**:349-360

[\[Abstract\]](#) [\[Full text\]](#) [\[PDF\]](#)

Sex Differences of Endogenous Sex Hormones and Risk of Type 2 Diabetes: A Systematic Review and Meta-analysis

JAMA 2006; **295**:1288-1299

[\[Abstract\]](#) [\[Full text\]](#) [\[PDF\]](#)

Testosterone replacement therapy: current trends and future directions

Hum Reprod Update 2004; **10**:409-419

[\[Abstract\]](#) [\[Full text\]](#) [\[PDF\]](#)