

Re: Low serum testosterone in men is inversely associated with non-fasting serum triglycerides: The Tromsø study

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- *From:* MarilynMann <mannm@xxxxxxxxxxxx>
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Low Serum Testosterone and High Serum Estradiol Associate With Lower
Extremity Peripheral Arterial Disease in Elderly Men

The MrOS Study in Sweden

Åsa Tivesten MD, PhD, , Dan Mellström MD, PhD , Hans Jutberger MD ,
Björn Fagerberg MD, PhD, Bodil Lernfelt MD, PhD , Eric Orwoll MD,
PhD!, Magnus K. Karlsson MD, PhD§, Östen Ljunggren MD, PhD and Claes
Ohlsson MD, PhD

Center for Bone Research at the Sahlgrenska Academy, Institute of
Medicine, Göteborg University, Göteborg, Sweden

!Bone and Mineral Unit, Oregon Health and Sciences University,
Portland, Oregon

The Wallenberg Laboratory for Cardiovascular Research, Göteborg
University, Göteborg, Sweden

Department of Medical Sciences, University of Uppsala, Uppsala,
Sweden.

§Clinical and Molecular Osteoporosis Research Unit, Department of
Clinical Sciences, Lund University, Department of Orthopaedics, Malmö
University Hospital, Malmö, Sweden

Objectives

This study sought to determine whether serum levels of testosterone
and estradiol associate with lower extremity peripheral arterial
disease (PAD) in a large population-based cohort of elderly men.

Background

Few studies have explored the relationship between serum sex steroids
and lower extremity PAD in men.

Methods

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The Swedish arm of the MrOS (Osteoporotic Fractures in Men) study (n = 3,014; average age 75.4 years) assessed ankle-brachial index (ABI) and defined lower extremity PAD as ABI <0.90. Radioimmunoassay measured serum levels of total testosterone, estradiol, and sex hormone-binding globulin, and we calculated free testosterone and free estradiol levels from the mass action equations.

Results

A linear regression model including age, current smoking, previous smoking, diabetes, hypertension, body mass index, free testosterone, and free estradiol showed that free testosterone independently and positively associates with ABI ($p < 0.001$), whereas free estradiol independently and negatively associates with ABI ($p < 0.001$). Logistic regression analyses showed that free testosterone in the lowest quartile (vs. quartiles 2 to 4; odds ratio [OR] 1.65, 95% confidence interval [CI] 1.22 to 2.23, $p = 0.001$) and free estradiol in the highest quartile (vs. quartiles 1 to 3; OR 1.45, 95% CI 1.09 to 1.94, $p = 0.012$) independently associate with lower extremity PAD.

Conclusions

This cross-sectional study shows for the first time that low serum testosterone and high serum estradiol levels associate with lower extremity PAD in elderly men. Future prospective and interventional studies are needed to establish possible causal relationships between sex steroids and the development of lower extremity PAD in men.

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Reprint requests and correspondence: Dr. Åsa Tivesten, Wallenberg Laboratory for Cardiovascular Research, Bruna Stråket 16, Sahlgrenska University Hospital, S-413 45 Göteborg, Sweden.