

# Serum antimüllerian hormone in response to dietary management and/or physical exercise in overweight/obese women with polycystic ovary syndrome: secondary analysis of a randomized controlled trial

Åsa Nybacka, B.Sc.,<sup>a,b</sup> Kjell Carlström, Ph.D.,<sup>a</sup> Fredrika Fabri,<sup>a</sup> Per Martin Hellström, M.D., Ph.D.,<sup>c</sup> and Angelica Lindén Hirschberg, M.D., Ph.D.<sup>a</sup>

<sup>a</sup> Department of Women's and Children's Health, Division of Obstetrics and Gynecology, Karolinska Institutet and Karolinska University Hospital, and <sup>b</sup> Department of Clinical Nutrition and Dietetics, Karolinska University Hospital, Stockholm; and <sup>c</sup> Department of Medical Sciences, Uppsala University, Uppsala, Sweden

**Objective:** To investigate whether randomized diet and/or physical exercise influence serum levels of antimüllerian hormone (AMH) in obese women with polycystic ovary syndrome (PCOS).

**Design:** Randomized, 4-month trial with three interventions.

**Setting:** Women's health clinical research unit at a university hospital.

**Patient(s):** Fifty-seven overweight/obese women with PCOS.

**Intervention(s):** Diet, physical exercise, or both, using programs individually adapted and supervised by a dietician and/or a physiotherapist.

**Main Outcome Measure(s):** Serum AMH levels before and after the interventions and correlations to reproductive function, body composition, and endocrine and metabolic variables.

**Result(s):** After intervention, serum levels of AMH were significantly decreased only in the diet group, and the levels were significantly lower than in the exercise group. The strongest predictor of decreased AMH was a decrease in free T, whereas weight loss had no significant influence. Normalized levels of AMH were associated with improvements in menstrual cyclicity and hyperandrogenism but not in metabolic variables.

**Conclusion(s):** This randomized study supports that diet reduces serum AMH in association with decreased androgen levels in obese women with PCOS. Increased serum AMH may be used as a marker of ovulatory dysfunction and hyperandrogenism but not as a marker of insulin resistance.

**Clinical Trial Registry Number:** ISRCTN48342048. (Fertil Steril® 2013;100:1096–102. ©2013 by American Society for Reproductive Medicine.)

**Key Words:** AMH, PCOS, obesity, diet, exercise

**Discuss:** You can discuss this article with its authors and with other ASRM members at <http://fertilityforum.com/nybackaa-antimullerian-hormone-diet-exercise-pcos/>



Use your smartphone to scan this QR code and connect to the discussion forum for this article now.\*

\* Download a free QR code scanner by searching for "QR scanner" in your smartphone's app store or app marketplace.

Received November 26, 2012; revised May 19, 2013; accepted June 7, 2013; published online July 19, 2013.

Å.N. has nothing to disclose. K.C. has nothing to disclose. F.F. has nothing to disclose. P.M.H. has nothing to disclose. A.L.H. has nothing to disclose.

This study was supported financially by Swedish Research Council grant 20324 (A.L.H.), the Karolinska Institutet, the Stockholm County Council, and the A. M. Thomér Fund.

Reprint requests: Angelica Lindén Hirschberg, M.D., Ph.D., Department of Women's and Children's Health, Karolinska Institutet, Karolinska University Hospital Solna, SE-17176 Stockholm, Sweden (E-mail: [angelica.linden-hirschberg@karolinska.se](mailto:angelica.linden-hirschberg@karolinska.se)).

Fertility and Sterility® Vol. 100, No. 4, October 2013 0015-0282/\$36.00  
Copyright ©2013 American Society for Reproductive Medicine, Published by Elsevier Inc.  
<http://dx.doi.org/10.1016/j.fertnstert.2013.06.030>

**P**olycystic ovary syndrome (PCOS) is the most common cause of anovulatory infertility, affecting 10%–15% of women of reproductive age (1). The syndrome is characterized by menstrual dysfunction, hyperandrogenism, and polycystic ovaries (PCO). Apart from impaired reproduction, PCOS is associated with insulin resistance, obesity, hyperinsulinemia,