

# ANDROGEN EXCESS AND PCOS SOCIETY

Quarterly Review for Androgen Excess-PCOS Society  
April 1<sup>st</sup> – June 30<sup>th</sup>, 2012

## Contents

### AEPCOS Publications in April – June, 2012

1. Witchel SF, Recabarren SE, González F, Diamanti-Kandarakis E, Cheang KI, Duleba AJ, Legro RS, Homburg R, Pasquali R, Lobo RA, Zouboulis CC, Kelestimur F, Fruzzetti F, Futterweit W, Norman RJ, Abbott DH. Emerging concepts about prenatal genesis, aberrant metabolism and treatment paradigms in polycystic ovary syndrome. *Endocrine*. 2012 42(3):526-34. doi: 10.1007/s12020-012-9701-4. Epub 2012 Jun 4. PubMed PMID: 22661293. .... 8

These selected highlights from the 8th Annual Meeting of the Androgen Excess and PCOS Society Annual Meeting in Munich, Germany (AEPCOS 2010) illustrate emerging concepts in PCOS. Studies into the pathogenesis of PCOS identified androgenic, glycemic, and inflammatory contributions implicating disordered TGF-beta signaling, while suggesting an analogous mechanism in affected male kin. Novel clinical approaches diversified the therapeutic options available to treat infertility in women with PCOS, and improved amelioration of PCOS symptoms, including metabolic dysfunction and hirsutism.

### List of April – June, 2012 Quarterly Publications

Congenital Adrenal Hyperplasia and Disorders of Steroidogenesis.....	3
Insulin Resistance.....	5
Polycystic ovary syndrome (PCOS).....	5
PCOS - Adolescence.....	5
PCOS - Dermatology and Body Hair Complications.....	6
PCOS - Endocrine Disrupters.....	6
PCOS - Etiology and Animal Models.....	6
PCOS - General Health Concerns.....	8
PCOS - Genetics.....	9
PCOS - Immunological Considerations.....	12
PCOS - After the Menopause.....	12
PCOS - Metabolic Dysfunction/Cardiovascular Disease/Inflammation.....	12
PCOS - Neuroendocrine Dysfunction.....	17
PCOS - Ovary.....	17
PCOS - Phenotypic Variation.....	22
PCOS - Pregnancy Complications.....	22
PCOS - Protocol Reviews.....	23
PCOS - Psychology.....	23
PCOS - Thyroid Complications.....	24
PCOS - Uterus.....	24
Premature Adrenarche.....	24

# ANDROGEN EXCESS AND PCOS SOCIETY

---

## **Brief overviews of selected publications**

### **Congenital Adrenal Hyperplasia and Disorders of Steroidogenesis**

Witchel SF, Miller WL. Prenatal treatment of congenital adrenal hyperplasia-not standard of care. *J Genet Couns.* 2012 Oct;21(5):615-24. doi: 10.1007/s10897-012-9508-8. Epub 2012 May 26 ..... 25

### **PCOS - Adolescence**



Eleftheriadou M, Michala L, Stefanidis K, Iliadis I, Lykeridou A, Antsaklis A. Exercise and sedentary habits among adolescents with PCOS. *J Pediatr Adolesc Gynecol.* 2012 Jun;25(3):172-4. doi: 10.1016/j.jpog.2011.11.009. Epub 2012 Jan 20. .... 25

Raissouni N, Kolesnikov A, Purushothaman R, Sinha S, Bhandari S, Bhangoo A, Malik S, Mathew R, Baillargeon JP, Hernandez MI, Rosenbaum M, Ten S, Geller D. Altered glucose disposition and insulin sensitivity in peri-pubertal first-degree relatives of women with polycystic ovary syndrome. *Int J Pediatr Endocrinol.* 2012 May 29;2012(1):14. PubMed PMID: 22643321; PubMed Central PMCID: PMC3477027 ..... 25

### **PCOS – Ovary**

Tosi F, Negri C, Perrone F, Dorizzi R, Castello R, Bonora E, Moghetti P. Hyperinsulinemia amplifies GnRH agonist stimulated ovarian steroid secretion in women with polycystic ovary syndrome. *J Clin Endocrinol Metab.* 2012 May;97(5):1712-9. PubMed PMID: 22419715.. 26

### **PCOS – Pregnancy Complications**

Morin-Papunen L, Rantala AS, Unkila-Kallio L, Tiitinen A, Hippeläinen M, Perheentupa A, Tinkanen H, Bloigu R, Puukka K, Ruokonen A, Tapanainen JS. Metformin improves pregnancy and live-birth rates in women with polycystic ovary syndrome (PCOS): a multicenter, double-blind, placebo-controlled randomized trial. *J Clin Endocrinol Metab.* 2012 May;97(5):1492-500. PubMed PMID: 22419702. .... 26

# ANDROGEN EXCESS AND PCOS SOCIETY

---

## List of April – June, 2012 Quarterly Publications

### Congenital Adrenal Hyperplasia and Disorders of Steroidogenesis

Barbaro M, Soardi FC, de Mello MP, Wedell A, Lajic S. Functional studies of CYP21A2 mutants complement structural and clinical predictions of disease severity in CAH. *Clin Endocrinol (Oxf)*. 2012 May;76(5):766-8. doi: 10.1111/j.1365-2265.2011.04275.

Brossaud J, Barat P, Fagour L, Corcuff JB. Cortisol assay in dried blood spots to reduce false positive rate in congenital adrenal hyperplasia screening. *Clin Chim Acta*. 2012 Aug 16;413(15-16):1306-7. doi: 10.1016/j.cca.2012.04.022. Epub 2012 Apr 25. PubMed PMID: 22561187.

Camats N, Pandey AV, Fernández-Cancio M, Andaluz P, Janner M, Torán N, Moreno F, Bereket A, Akcay T, García-García E, Muñoz MT, Gracia R, Nistal M, Castaño L, Mullis PE, Carrascosa A, Audí L, Flück CE. Ten novel mutations in the NR5A1 gene cause disordered sex development in 46,XY and ovarian insufficiency in 46,XX individuals. *J Clin Endocrinol Metab*. 2012 Jul;97(7):E1294-306. doi: 10.1210/jc.2011-3169

Cheng TQ, Speiser PW. Treatment outcomes in congenital adrenal hyperplasia. *Adv Pediatr*. 2012;59(1):269-81. doi: 10.1016/j.yapd.2012.04.009. Epub 2012 Jun 12. Review

Concolino P, Mello E, Patrosso MC, Penco S, Zuppi C, Capoluongo E. p.H282N and p.Y191H: 2 novel CYP21A2 mutations in Italian congenital adrenal hyperplasia patients. *Metabolism*. 2012 Apr;61(4):519-24. doi: 10.1016/j.metabol.2011.08.008

Falhammar H, Thorén M. Clinical outcomes in the management of congenital adrenal hyperplasia. *Endocrine*. 2012 Jun;41(3):355-73. doi: 10.1007/s12020-011-9591-x.

Gonçalves EM, Silva AM, Matias CN, Lemos-Marini SH, Santos AO, Guerra-Júnior G. Estimation of percent body fat based on anthropometric measurements in children and adolescents with congenital adrenal hyperplasia due to 21-hydroxylase deficiency. *Clin Nutr*. 2012 May 28.

Güran T, Yeşil G, Güran Ö, Cesur S, Bosnalı O, Celayir A, Topçuoğlu S, Bereket A. A giant ovarian cyst in a neonate with classical 21-hydroxylase deficiency with very high testosterone levels demonstrating a high-dose hook effect. *J Clin Res Pediatr Endocrinol*. 2012 Sep;4(3):151-3. doi: 10.4274/jcrpe.685.

Hindmarsh PC. Endocrine Society Congenital Adrenal Hyperplasia Guidelines: great content but how to deliver? *Clin Endocrinol (Oxf)*. 2012 Apr;76(4):465-6. doi: 10.1111/j.1365-2265.2011.04289.x

Hirvikoski T, Nordenström A, Wedell A, Ritzén M, Lajic S. Prenatal dexamethasone treatment of children at risk for congenital adrenal hyperplasia: the Swedish experience and standpoint. *J Clin Endocrinol Metab*. 2012 Jun;97(6):1881-3. doi: 10.1210/jc.2012-1222.

Janzen N, Riepe FG, Peter M, Sander S, Steuerwald U, Korsch E, Krull F, Müller HL, Heger S, Brack C, Sander J. Neonatal screening: identification of children with 11 $\beta$ -hydroxylase deficiency by second-tier testing. *Horm Res Paediatr*. 2012;77(3):195-9. doi: 10.1159/000337974.

# ANDROGEN EXCESS AND PCOS SOCIETY

---

Jiang L, Song LL, Wang H, Wang JL, Wang PP, Zhou HB, Zhang XL. Identification and functional characterization of a novel mutation P459H and a rare mutation R483W in the CYP21A2 gene in two Chinese patients with simple virilizing form of congenital adrenal hyperplasia. *J Endocrinol Invest*. 2012 May;35(5):485-9. doi: 10.3275/7860.

Lekarev O, Mallet D, Yuen T, Morel Y, New MI. Congenital lipoid adrenal hyperplasia (a rare form of adrenal insufficiency and ambiguous genitalia) caused by a novel mutation of the steroidogenic acute regulatory protein gene. *Eur J Pediatr*. 2012 May;171(5):787-93. doi: 10.1007/s00431-011-1620-5.

Marumudi E, Sharma A, Kulshreshtha B, Khadgawat R, Khurana ML, Ammini AC. Molecular genetic analysis of CYP21A2 gene in patients with congenital adrenal hyperplasia. *Indian J Endocrinol Metab*. 2012 May;16(3):384-8. doi: 10.4103/2230-8210.95679

Meyer-Bahlburg HF, Dolezal C, Haggerty R, Silverman M, New MI. Cognitive outcome of offspring from dexamethasone-treated pregnancies at risk for congenital adrenal hyperplasia due to 21-hydroxylase deficiency. *Eur J Endocrinol*. 2012 Jul;167(1):103-10. doi: 10.1530/EJE-11-0789.

Pijnenburg-Kleizen KJ, Borm GF, Otten BJ, Schott DA, van den Akker EL, Stokvis-Brantsma WH, Voorhoeve PG, Bakker B, Claahsen-van der Grinten HL. Absence of clinically relevant growth acceleration in untreated children with non-classical congenital adrenal hyperplasia. *Horm Res Paediatr*. 2012;77(3):164-9. doi: 10.1159/000337217

Purwana IN, Kanasaki H, Oride A, Miyazaki K. Successful pregnancy after the treatment of primary amenorrhea in a patient with non-classical congenital adrenal hyperplasia. *J Obstet Gynaecol Res*. 2012 Jun 4. doi: 10.1111/j.1447-0756.2012.01903.

Rabbani B, Mahdiah N, Haghi Ashtiani MT, Setoodeh A, Rabbani A. In silico structural, functional and pathogenicity evaluation of a novel mutation: an overview of HSD3B2 gene mutations. *Gene*. 2012 Jul 25;503(2):215-21. doi: 10.1016/j.gene.2012.04.080.

Reisch N, Willige M, Kohn D, Schwarz HP, Allolio B, Reincke M, Quinkler M, Hahner S, Beuschlein F. Frequency and causes of adrenal crises over lifetime in patients with 21-hydroxylase deficiency. *Eur J Endocrinol*. 2012 Jul;167(1):35-42. doi: 10.1530/EJE-12-0161

Sarafoglou K, Banks K, Kylo J, Pittock S, Thomas W. Cases of congenital adrenal hyperplasia missed by newborn screening in Minnesota. *JAMA*. 2012 Jun 13;307(22):2371-4. doi: 10.1001/jama.2012.5281.

Taylor NF, Chan AO. New strategies for detecting steroid metabolic disorders--paneling vs profiling. *Clin Chem*. 2012 Aug;58(8):1262-3. doi: 10.1373/clinchem.2012.189613.

Trakakis E, Papadavid E, Dalamaga M, Koumaki D, Stavrianeas N, Rigopoulos D, Creatsas G, Kassanos D. Prevalence of non classical congenital adrenal hyperplasia due to 21-hydroxylase deficiency in Greek women with acne: a hospital-based cross-sectional study. *J Eur Acad Dermatol Venereol*. 2012 Jun 15. doi: 10.1111/j.1468-3083.2012.04613.x

# ANDROGEN EXCESS AND PCOS SOCIETY

---

Vigliani MB, Buster JE. Nonclassic 21-hydroxylase deficiency presenting as endometrial hyperplasia with uterine bleeding in a 67-year-old woman. *Fertil Steril.* 2012 Apr;97(4):950-2. doi: 10.1016/j.fertnstert.2012.01.089

Votava F, Novotna D, Kracmar P, Vinohradská H, Stáhlíková-Hrabincová E, Vrzalová Z, Neumann D, Malíková J, Lebl J, Matern D. Lessons learned from 5 years of newborn screening for congenital adrenal hyperplasia in the Czech Republic: 17-hydroxyprogesterone, genotypes, and screening performance. *Eur J Pediatr.* 2012 Jun;171(6):935-40. doi: 10.1007/s00431-011-1656-6.

Witchel SF. Nonclassic congenital adrenal hyperplasia. *Curr Opin Endocrinol Diabetes Obes.* 2012 Jun;19(3):151-8. doi: 10.1097/MED.0b013e3283534db2

Witchel SF, Miller WL. Prenatal treatment of congenital adrenal hyperplasia-not standard of care. *J Genet Couns.* 2012 Oct;21(5):615-24. doi: 10.1007/s10897-012-9508-8. Epub 2012 May 26.

## **Insulin resistance**

See citations in the section "PCOS - Metabolic Dysfunction/Cardiovascular Disease/Inflammation".

## **Polycystic ovary syndrome (PCOS)**

### **PCOS – Adolescence**

Bechtold S, Dalla Pozza R, Putzker S, Roeb J, Buckel M, Weissenbacher C, Schmidt H. Effect of antiandrogen treatment on bone density and bone geometry in adolescents with polycystic ovary syndrome. *J Pediatr Adolesc Gynecol.* 2012 Jun;25(3):175-80. PubMed PMID: 22260890.

Connor EL. Adolescent polycystic ovary syndrome. *Adolesc Med State Art Rev.* 2012 Apr;23(1):164-77, xii. PubMed PMID: 22764561.

Eleftheriadou M, Michala L, Stefanidis K, Iliadis I, Lykeridou A, Antsaklis A. Exercise and sedentary habits among adolescents with PCOS. *J Pediatr Adolesc Gynecol.* 2012 Jun;25(3):172-4. PubMed PMID: 22260889.

Hızlı D, Köşüş A, Köşüş N, Kamalak Z, Ak D, Turhan NÖ. The impact of birth weight and maternal history on acne, hirsutism, and menstrual disorder symptoms in Turkish adolescent girls. *Endocrine.* 2012 Jun;41(3):473-8. PubMed PMID: 22173824.

Nidhi R, Padmalatha V, Nagarathna R, Ram A. Effect of a yoga program on glucose metabolism and blood lipid levels in adolescent girls with polycystic ovary syndrome. *Int J Gynaecol Obstet.* 2012 Jul;118(1):37-41. PubMed PMID: 22507264.

Peacock A, Alvi NS, Mushtaq T. Period problems: disorders of menstruation in adolescents. *Arch Dis Child.* 2012 Jun;97(6):554-60 PubMed. PMID: 20576661.

Rahmanpour H, Jamal L, Mousavinasab SN, Esmailzadeh A, Azarkhish K. Association between polycystic ovarian syndrome, overweight, and metabolic syndrome in adolescents. *J Pediatr Adolesc Gynecol.* 2012 Jun;25(3):208-12. PubMed PMID: 22578482.

# ANDROGEN EXCESS AND PCOS SOCIETY

---

Raissouni N, Kolesnikov A, Purushothaman R, Sinha S, Bhandari S, Bhangoo A, Malik S, Mathew R, Baillargeon JP, Hernandez MI, Rosenbaum M, Ten S, Geller D. Altered glucose disposition and insulin sensitivity in peri-pubertal first-degree relatives of women with polycystic ovary syndrome. *Int J Pediatr Endocrinol*. 2012 May 29;2012(1):14. PubMed PMID: 22643321; PubMed Central PMCID: PMC3477027.

Sanfilippo JS. NASPAG 25 years later. *J Pediatr Adolesc Gynecol*. 2012 Apr;25(2):88-92. PubMed PMID: 22421560.

Sir-Petermann T, Ladrón de Guevara A, Codner E, Preisler J, Crisosto N, Echiburú B, Maliqueo M, Sánchez F, Perez-Bravo F, Cassorla F. Relationship between anti-Müllerian hormone (AMH) and insulin levels during different tanner stages in daughters of women with polycystic ovary syndrome. *Reprod Sci*. 2012 Apr;19(4):383-90. PubMed PMID: 22344736.

Sopher AB, Gerken AT, Blaner WS, Root JM, McMahon DJ, Oberfield SE. Metabolic manifestations of polycystic ovary syndrome in nonobese adolescents: retinol-binding protein 4 and ectopic fat deposition. *Fertil Steril*. 2012 Apr;97(4):1009-15. PubMed PMID: 22341881.

Villa P, Rossodivita A, Sagnella F, Moruzzi MC, Mariano N, Lassandro AP, Pontecorvi A, Scambia G, Lanzone A. Ovarian Volume And Gluco-Insulinaemic Markers In The Diagnosis Of Pcos During Adolescence. *Clin Endocrinol (Oxf)*. 2012 Jun 22. PubMed PMID: 22724514.

## **PCOS – Dermatology and Body Hair Complications**

Haendler B, Cleve A. Recent developments in antiandrogens and selective androgen receptor modulators. *Mol Cell Endocrinol*. 2012 Apr 16;352(1-2):79-91. PubMed PMID: 21704118.

Roth LW, Huang H, Legro RS, Diamond MP, Coutifaris C, Carson SA, Steinkampf MP, Carr BR, McGovern PG, Cataldo NA, Gosman GG, Nestler JE, Myers ER, Zhang H, Schlaff WD; Reproductive Medicine Network. Altering hirsutism through ovulation induction in women with polycystic ovary syndrome. *Obstet Gynecol*. 2012 Jun;119(6):1151-6. PubMed PMID: 22617579; PubMed Central PMCID: PMC3360417.

## **PCOS – Endocrine Disrupters**

None.

## **PCOS – Etiology and Animal Models**

Abramovich D, Irusta G, Bas D, Cataldi NI, Parborell F, Tesone M. Angiopoietins/TIE2 system and VEGF are involved in ovarian function in a DHEA rat model of polycystic ovary syndrome. *Endocrinology*. 2012 Jul;153(7):3446-56. PubMed PMID: 22577112.

Amalfi S, Velez LM, Heber MF, Vighi S, Ferreira SR, Orozco AV, Pignataro O, Motta AB. Prenatal hyperandrogenization induces metabolic and endocrine alterations which depend on the levels of testosterone exposure. *PLoS One*. 2012;7(5):e37658. PubMed PMID: 22655062; PubMed Central PMCID: PMC3360026.



# ANDROGEN EXCESS AND PCOS SOCIETY

---

Brown RE, Wilkinson DA, Imran SA, Caraty A, Wilkinson M. Hypothalamic kiss1 mRNA and kisspeptin immunoreactivity are reduced in a rat model of polycystic ovary syndrome (PCOS). *Brain Res.* 2012 Jul 27;1467:1-9. PubMed PMID: 22668987.

Davies MJ, March WA, Willson KJ, Giles LC, Moore VM. Birthweight and thinness at birth independently predict symptoms of polycystic ovary syndrome in adulthood. *Hum Reprod.* 2012 May;27(5):1475-80. PubMed PMID: 22373955.

Feng Y, Johansson J, Shao R, Mannerås-Holm L, Billig H, Stener-Victorin E. Electrical and manual acupuncture stimulation affect oestrous cyclicity and neuroendocrine function in an 5 $\alpha$ -dihydrotestosterone-induced rat polycystic ovary syndrome model. *Exp Physiol.* 2012 May;97(5):651-62. PubMed PMID: 22337865.

Figuroa F, Davicino R, Micalizzi B, Oliveros L, Forneris M. Macrophage secretions modulate the steroidogenesis of polycystic ovary in rats: effect of testosterone on macrophage pro-inflammatory cytokines. *Life Sci.* 2012 May 22;90(19-20):733-9. Epub 2012 Mar 28. PubMed PMID: 22480516.

Franks S. Animal models and the developmental origins of polycystic ovary syndrome: increasing evidence for the role of androgens in programming reproductive and metabolic dysfunction. *Endocrinology.* 2012 Jun;153(6):2536-8. PubMed PMID: 22610962.

Li J, Wang F, Kong HJ, Liu WW, Sun YP. Differentiation of polycystic ovary syndrome-derived human embryonic stem cells into adipocytes and their glucose consumption. *Gynecol Endocrinol.* 2012 Nov;28(11):871-3. PubMed PMID: 22571227.

Nugent BM, Tobet SA, Lara HE, Lucion AB, Wilson ME, Recabarren SE, Paredes AH. Hormonal programming across the lifespan. *Horm Metab Res.* 2012 Jul;44(8):577-86. PubMed PMID: 22700441.

Palomba S, Marotta A, Di Cello A, Russo T, Falbo A, Orio F, Tolino A, Zullo F, Esposito R, La Sala GB. Pervasive developmental disorders in children of hyperandrogenic women with polycystic ovary syndrome: a longitudinal case-control study. *Clin Endocrinol (Oxf).* 2012 May 21. PubMed PMID: 22612600.

Restuccia DF, Hynx D, Hemmings BA. Loss of PKB $\beta$ /Akt2 predisposes mice to ovarian cyst formation and increases the severity of polycystic ovary formation in vivo. *Dis Model Mech.* 2012 May;5(3):403-11. PubMed PMID: 22275470; PubMed Central PMCID: PMC3339834.

Sara L, Nadasy GL, Antal P, Monori-Kiss A, Szekeres M, Masszi G, Monos E, Varbiro S. Pharmacological reactivity of resistance vessels in a rat PCOS model - vascular effects of parallel vitamin D3 treatment. *Gynecol Endocrinol.* 2012 May 24. PubMed PMID: 22621463.

Shi D, Vine DF. Animal models of polycystic ovary syndrome: a focused review of rodent models in relationship to clinical phenotypes and cardiometabolic risk. *Fertil Steril.* 2012 Jul;98(1):185-93. PubMed PMID: 22607890.

Tremellen K, Pearce K. Dysbiosis of Gut Microbiota (DOGMA)--a novel theory for the development of Polycystic Ovarian Syndrome. *Med Hypotheses.* 2012 Jul;79(1):104-12. PubMed PMID: 22543078.

van Houten EL, Kramer P, McLuskey A, Karels B, Themmen AP, Visser JA. Reproductive and metabolic phenotype of a mouse model of PCOS. *Endocrinology.* 2012 Jun;153(6):2861-9. PubMed PMID: 22334715.

# ANDROGEN EXCESS AND PCOS SOCIETY

---

Walters KA, Allan CM, Handelsman DJ. Rodent models for human polycystic ovary syndrome. *Biol Reprod*. 2012 May 10;86(5):149, 1-12. PubMed PMID: 22337333.

Wang F, Yu B, Yang W, Liu J, Lu J, Xia X. Polycystic ovary syndrome resembling histopathological alterations in ovaries from prenatal androgenized female rats. *J Ovarian Res*. 2012 May 18;5(1):15. PubMed PMID: 22607720; PubMed Central PMCID: PMC3406938.

Witchel SF, Recabarren SE, González F, Diamanti-Kandarakis E, Cheang KI, Duleba AJ, Legro RS, Homburg R, Pasquali R, Lobo RA, Zouboulis CC, Kelestimur F, Fruzzetti F, Futterweit W, Norman RJ, Abbott DH. Emerging concepts about prenatal genesis, aberrant metabolism and treatment paradigms in polycystic ovary syndrome. *Endocrine*. 2012 Jun 4. PubMed PMID: 22661293.

## **PCOS – General Health Concerns**

Armanini D, Bordin L, Donà G, Sabbadin C, Bakdounes L, Ragazzi E, Giorgino FL, Fiore C. Polycystic ovary syndrome: Implications of measurement of plasma aldosterone, renin activity and progesterone. *Steroids*. 2012 May;77(6):655-8. PubMed PMID: 22387621.

Campagnoli C, Pasanisi P, Abbà C, Ambroggio S, Biglia N, Brucato T, Colombero R, Danese S, Donadio M, Venturelli E, Zito G, Berrino F. Effect of different doses of metformin on serum testosterone and insulin in non-diabetic women with breast cancer: a randomized study. *Clin Breast Cancer*. 2012 Jun;12(3):175-82. PubMed PMID: 22607767.

Kurdoglu Z, Kurdoglu M, Demir H, Sahin HG. Serum trace elements and heavy metals in polycystic ovary syndrome. *Hum Exp Toxicol*. 2012 May;31(5):452-6. PubMed PMID: 22027497.

Lerchbaum E, Obermayer-Pietsch B. Vitamin D and fertility: a systematic review. *Eur J Endocrinol*. 2012 May;166(5):765-78. PubMed PMID: 22275473.

Moncayo R, Moncayo H. Inadequate description of an acupuncture treatment study for polycystic ovaries. *Fertil Steril*. 2012 May;97(5):e20; PubMed PMID: 22445321.

Mousiolis A, Michala L, Antsaklis A. Polycystic ovary syndrome: double click and right check. What do patients learn from the Internet about PCOS? *Eur J Obstet Gynecol Reprod Biol*. 2012 Jul;163(1):43-6. PubMed PMID: 22512829.

Ozçaka O, Oztürk Ceyhan B, Akcali A, Biçakci N, Lappin DF, Buduneli N. Is there an Interaction Between Polycystic Ovary Syndrome and Gingival Inflammation? *J Periodontol*. 2012 Apr 17. PubMed PMID: 22509751.

Ozkaya E, Cakir E, Cinar M, Kara F, Baser E, Cakir C, Kucukozkan T. Is hyperandrogenemia protective for fibrocystic breast disease in PCOS? *Gynecol Endocrinol*. 2012 Jun;28(6):468-71 PubMed PMID: 22103710.

Phelan N, O'Connor A, Kyaw Tun T, Correia N, Boran G, Roche H, Gibney J. Leukocytosis in women with polycystic ovary syndrome (PCOS) is incompletely explained by obesity and insulin resistance. *Clin Endocrinol (Oxf)*. 2012 Jun 20. PubMed PMID: 22712547.

Yavaşoglu I, Küçük M. Anti-Helicobacter pylori antibodies and polycystic ovary syndrome. *Eur J Obstet Gynecol Reprod Biol*. 2012 Aug;163(2):243; PubMed PMID: 22560062.



# ANDROGEN EXCESS AND PCOS SOCIETY

---

Zhang Z, Gong F, Lu GX. Plasma level of calcitonin gene-related peptide in patients with polycystic ovary syndrome and its relationship to hormonal and metabolic parameters. *Peptides*. 2012 Apr;34(2):343-8. PubMed PMID: 22314079.

## **PCOS – Genetics**

Chan Y, Zi F, Wu X, Ma L, Meng Y, Chen J, Wang S, Luo S, Luo Y, Tang W. Note of clarification of data in the meta-analysis of methylenetetrahydrofolate reductase C677T polymorphisms in polycystic ovary syndrome. *Mol Hum Reprod*. 2012 Oct;18(10):514-5. PubMed PMID: 22707671.

Chiang CW, Liu CT, Lettre G, Lange LA, Jorgensen NW, Keating BJ, Vedantam S, Nock NL, Franceschini N, Reiner AP, Demerath EW, Boerwinkle E, Rotter JI, Wilson JG, North KE, Papanicolaou GJ, Cupples LA; Genetic Investigation of ANthropometric Traits (GIANT) Consortium, Murabito JM, Hirschhorn JN. Ultraconserved elements in the human genome: association and transmission analyses of highly constrained single-nucleotide polymorphisms. *Genetics*. 2012 Sep;192(1):253-66. PubMed PMID: 22714408; PubMed Central PMCID: PMC3430540.

Chua AK, Azziz R, Goodarzi MO. Association study of CYP17 and HSD11B1 in polycystic ovary syndrome utilizing comprehensive gene coverage. *Mol Hum Reprod*. 2012 Jun;18(6):320-4. PubMed PMID: 22238371; PubMed Central PMCID: PMC3358039.

Costa F, Dornelles E, Mânica-Cattani MF, Algarve TD, Souza Filho OC, Sagrillo MR, Garcia LF, Cruz IB. Influence of Val16Ala SOD2 polymorphism on the in-vitro effect of clomiphene citrate in oxidative metabolism. *Reprod Biomed Online*. 2012 Apr;24(4):474-81. PubMed PMID: 22386763.

Dasgupta S, Sirisha P, Neelaveni K, Anuradha K, Sudhakar G, Reddy BM. Polymorphisms in the IRS-1 and PPAR- $\gamma$  genes and their association with polycystic ovary syndrome among South Indian women. *Gene*. 2012 Jul 15;503(1):140-6. PubMed PMID: 22575725.

Eriksen MB, Brusgaard K, Andersen M, Tan Q, Altinok ML, Gaster M, Glintborg D. Association of polycystic ovary syndrome susceptibility single nucleotide polymorphism rs2479106 and PCOS in Caucasian patients with PCOS or hirsutism as referral diagnosis. *Eur J Obstet Gynecol Reprod Biol*. 2012 Jul;163(1):39-42. PubMed PMID: 22504079.

Guo M, Chen ZJ, Eijkemans MJ, Goverde AJ, Fauser BC, Macklon NS. Comparison of the phenotype of Chinese versus Dutch Caucasian women presenting with polycystic ovary syndrome and oligo/amenorrhoea. *Hum Reprod*. 2012 May;27(5):1481-8. PubMed PMID: 22402209.

Guo X, Cui J, Jones MR, Haritunians T, Xiang AH, Chen YD, Taylor KD, Buchanan TA, Davis RC, Hsueh WA, Raffel LJ, Rotter JI, Goodarzi MO. Insulin clearance: confirmation as a highly heritable trait, and genome-wide linkage analysis. *Diabetologia*. 2012 Aug;55(8):2183-92. PubMed PMID: 22584727; PubMed Central PMCID: PMC3391346.

He J, Wang L, Liu J, Liu F, Li X. A meta-analysis on the association between PPAR- $\gamma$  Pro12Ala polymorphism and polycystic ovary syndrome. *J Assist Reprod Genet*. 2012 Jul;29(7):669-77. PubMed PMID: 22527903; PubMed Central PMCID: PMC3401263.

# ANDROGEN EXCESS AND PCOS SOCIETY

---

Jones MR, Chazenbalk G, Xu N, Chua AK, Eigler T, Mengesha E, Chen YH, Lee JM, Pall M, Li X, Chen YD, Taylor KD, Mathur R, Krauss RM, Rotter JI, Legro RS, Azziz R, Goodarzi MO. Steroidogenic Regulatory Factor FOS Is Underexpressed in Polycystic Ovary Syndrome (PCOS) Adipose Tissue and Genetically Associated with PCOS Susceptibility. *J Clin Endocrinol Metab.* 2012 Sep;97(9):E1750-7. PubMed PMID: 22723319; PubMed Central PMCID: PMC3431575.

Knebel B, Janssen OE, Hahn S, Jacob S, Nitzgen U, Haas J, Muller-Wieland D, Kotzka J. Genetic variations in SREBP-1 and LXR $\alpha$  are not directly associated to PCOS but contribute to the physiological specifics of the syndrome. *Mol Biol Rep.* 2012 Jun;39(6):6835-42. PubMed PMID: 22311022.

Mohiyiddeen L, Salim S, Mulugeta B, McBurney H, Newman WG, Pemberton P, Nardo LG. PCOS and peripheral AMH levels in relation to FSH receptor gene single nucleotide polymorphisms. *Gynecol Endocrinol.* 2012 May;28(5):375-7. PubMed PMID: 22429116.

Knebel B, Lehr S, Janssen OE, Hahn S, Nitzgen U, Jacob S, Haas J, Muller-Wieland D, Kotzka J. Genetic variants in central metabolic genes influence some but not all relations of inflammatory markers in a collective with polycystic ovary syndrome. *Arch Physiol Biochem.* 2012 Oct;118(4):219-29. PubMed PMID: 22738153.

Koika V, Georgopoulos NA, Piouka A, Roupas ND, Karela A, Armeni AK, Katsantoni E, Panidis D. Increased frequency of the DI genotype of the angiotensin-I converting enzyme and association of the II genotype with insulin resistance in polycystic ovary syndrome. *Eur J Endocrinol.* 2012 Apr;166(4):695-702 PubMed PMID: 22223701.

Li T, Zhao H, Zhao X, Zhang B, Cui L, Shi Y, Li G, Wang P, Chen ZJ. Identification of YAP1 as a novel susceptibility gene for polycystic ovary syndrome. *J Med Genet.* 2012 Apr;49(4):254-7. PubMed PMID: 22499345.

Liu N, Ma Y, Wang S, Zhang X, Zhang Q, Zhang X, Fu L, Qiao J. Association of the genetic variants of luteinizing hormone, luteinizing hormone receptor and polycystic ovary syndrome. *Reprod Biol Endocrinol.* 2012 Apr 30;10:36. PubMed PMID: 22546001; PubMed Central PMCID: PMC3403896.

Martínez-García MA, San-Millán JL, Escobar-Morreale HF. The R453Q and D151A polymorphisms of hexose-6-phosphate dehydrogenase gene (H6PD) influence the polycystic ovary syndrome (PCOS) and obesity. *Gene.* 2012 Apr 10;497(1):38-44. PubMed PMID: 22306327.

Ruan Y, Ma J, Xie X. Association of IRS-1 and IRS-2 genes polymorphisms with polycystic ovary syndrome: a meta-analysis. *Endocr J.* 2012 Jul 31;59(7):601-9. PubMed PMID: 22523112.

Schweighofer N, Lerchbaum E, Trummer O, Schwetz V, Pilz S, Pieber TR, Obermayer-Pietsch B. Androgen levels and metabolic parameters are associated with a genetic variant of F13A1 in women with polycystic ovary syndrome. *Gene.* 2012 Aug 1;504(1):133-9. PubMed PMID: 22565190.

Tang ST, Wang CJ, Tang HQ, Peng WJ, Wang YM, Zhang Q. Association of Pro12Ala polymorphism in peroxisome proliferator-activated receptor gamma with polycystic ovary syndrome: a meta-analysis. *Mol Biol Rep.* 2012 Oct;39(10):9649-60. PubMed PMID: 22729915.

Včelák J, Vejražková D, Vaňková M, Lukášová P, Bradnová O, Hálková T, Bešťák J, Andělová K, Kvasničková H, Hoskovcová P, Vondra K, Vrbíková J, Bendlová B. T2D risk haplotypes of the TCF7L2 gene in the Czech

# ANDROGEN EXCESS AND PCOS SOCIETY

---

population sample: the association with free fatty acids composition. *Physiol Res*. 2012 Jul 20;61(3):229-40. PubMed PMID: 22480428.

Wang R, Goodarzi MO, Xiong T, Wang D, Azziz R, Zhang H. Negative association between androgen receptor gene CAG repeat polymorphism and polycystic ovary syndrome? A systematic review and meta-analysis. *Mol Hum Reprod*. 2012 Oct;18(10):498-509. PubMed PMID: 22695532; PubMed Central PMCID: PMC3457706.

Wang Y, Liu H, Fan P, Bai H, Zhang J, Zhang F. Evidence for association between paraoxonase 1 gene polymorphisms and polycystic ovarian syndrome in southwest Chinese women. *Eur J Endocrinol*. 2012 May;166(5):877-85. PubMed PMID: 22301914.

Welt CK, Styrkarsdottir U, Ehrmann DA, Thorleifsson G, Arason G, Gudmundsson JA, Ober C, Rosenfield RL, Saxena R, Thorsteinsdottir U, Crowley WF, Stefansson K. Variants in DENND1A are associated with polycystic ovary syndrome in women of European ancestry. *J Clin Endocrinol Metab*. 2012 Jul;97(7):E1342-7. PubMed PMID: 22547425; PubMed Central PMCID: PMC3387396.

Xia Y, Che Y, Zhang X, Zhang C, Cao Y, Wang W, Xu P, Wu X, Yi L, Gao Q, Wang Y. Polymorphic CAG repeat in the androgen receptor gene in polycystic ovary syndrome patients. *Mol Med Report*. 2012 May;5(5):1330-4. PubMed PMID: 22344533.

Xian L, He W, Pang F, Hu Y. ADIPOQ gene polymorphisms and susceptibility to polycystic ovary syndrome: a HuGE survey and meta-analysis. *Eur J Obstet Gynecol Reprod Biol*. 2012 Apr;161(2):117-24. PubMed PMID: 22239938.

Yalamanchi SK, Sam S, Cardenas MO, Holaday LW, Urbanek M, Dunaif A. Association of fibrillin-3 and transcription factor-7-like 2 gene variants with metabolic phenotypes in PCOS. *Obesity (Silver Spring)*. 2012 Jun;20(6):1273-8. PubMed PMID: 22301903; PubMed Central PMCID: PMC3346885.

Yin Q, Chen X, Li L, Zhou R, Huang J, Yang D. Apolipoprotein B/apolipoprotein A1 ratio is a good predictive marker of metabolic syndrome and pre-metabolic syndrome in Chinese adolescent women with polycystic ovary syndrome. *J Obstet Gynaecol Res*. 2012 Jun 4. PubMed PMID: 22672648.

Yun JH, Gu BH, Kang YB, Choi BC, Song S, Baek KH. Association between INS-VNTR polymorphism and polycystic ovary syndrome in a Korean population. *Gynecol Endocrinol*. 2012 Jul;28(7):525-8. PubMed PMID: 22468791.

Zhang CW, Zhang XL, Xia YJ, Cao YX, Wang WJ, Xu P, Che YN, Wu XK, Yi L, Gao Q, Wang Y. Association between polymorphisms of the CYP11A1 gene and polycystic ovary syndrome in Chinese women. *Mol Biol Rep*. 2012 Aug;39(8):8379-85. PubMed PMID: 22699877.

Zhang H, Bi Y, Hu C, Lu W, Zhu D. Association between the Pro12Ala polymorphism of PPAR- $\gamma$  gene and the polycystic ovary syndrome: a meta-analysis of case-control studies. *Gene*. 2012 Jul 15;503(1):12-7. PubMed PMID: 22564702.

Zhuo G, Ding Y, Feng G, Yu L, Jiang Y. Analysis of mitochondrial DNA sequence variants in patients with polycystic ovary syndrome. *Arch Gynecol Obstet*. 2012 Sep;286(3):653-9. PubMed PMID: 22546954.

# ANDROGEN EXCESS AND PCOS SOCIETY

---

## PCOS – Immunological Considerations

None.

## PCOS – After the Menopause

None.

## PCOS – Metabolic Dysfunction/Cardiovascular Disease/Inflammation



Abdel-Rahman MY, Jackson LW, Rodewald KJ, Abdellah MA, Ismail SA, Hurd WW. Polycystic ovary syndrome and diabetes screening: a survey of gynecologists and reproductive endocrinologists. *Eur J Obstet Gynecol Reprod Biol.* 2012 Jun;162(2):178-81. PubMed PMID: 22464207.

Alanbay I, Ercan CM, Sakinci M, Coksuer H, Ozturk M, Tapan S. A macrophage activation marker chitotriosidase in women with PCOS: does low-grade chronic inflammation in PCOS relate to PCOS itself or obesity? *Arch Gynecol Obstet.* 2012 Oct;286(4):1065-71. PubMed PMID: 22718099.

Alanbay I, Mutlu Ercan C, Coksuer H, Sakinci M, Karasahin KE, Ozturk O, Yaman H. Neopterin: a promising marker for the inflammation in polycystic ovary syndrome. *Gynecol Endocrinol.* 2012 Nov;28(11):879-83. PubMed PMID: 22607465.

Aydogdu A, Tasci I, Tapan S, Sonmez A, Aydogan U, Akbulut H, Uckaya G, Aydogdu S, Basaran Y, Meric C, Taslipinar A, Kurt I, Azal O. Women with polycystic ovary syndrome have increased plasma chitotriosidase activity: a pathophysiological link between inflammation and impaired insulin sensitivity? *Exp Clin Endocrinol Diabetes.* 2012 May;120(5):261-5. PubMed PMID: 22549343.

Aydogdu A, Uckaya G, Tasci I, Baysan O, Tapan S, Bugan B, Serdar M, Akbulut H, Aydogan U, Sonmez A, Aydogdu S, Kutlu M. The relationship of epicardial adipose tissue thickness to clinical and biochemical features in women with polycystic ovary syndrome. *Endocr J.* 2012 Jun 30;59(6):509-16. PubMed PMID: 22447143.

Bayram F, Kocer D, Ozsan M, Muhtaroglu S. Evaluation of endothelial dysfunction, lipid metabolism in women with polycystic ovary syndrome: relationship of paraoxonase 1 activity, malondialdehyde levels, low-density lipoprotein subfractions, and endothelial dysfunction. *Gynecol Endocrinol.* 2012 Jul;28(7):497-501. PubMed PMID: 22703625.

Berstein LM. Metformin in obesity, cancer and aging: addressing controversies. *Aging (Albany NY).* 2012 May;4(5):320-9. PubMed PMID: 22589237; PubMed Central PMCID: PMC3384433.

Billhult A, Stener-Victorin E. Acupuncture with manual and low frequency electrical stimulation as experienced by women with polycystic ovary syndrome: a qualitative study. *BMC Complement Altern Med.* 2012 Apr 3;12:32. PubMed PMID: 22471422; PubMed Central PMCID: PMC3365875.

Boztosun A, Deveci K, Klçl F, Söylemez MS, Muhtaroglu S, Müderris II. Serum levels of angiotensin-related growth factor (AGF) are increased in polycystic ovary syndrome. *J Investig Med.* 2012 Jun;60(5):813-7. PubMed PMID: 22406517.

# ANDROGEN EXCESS AND PCOS SOCIETY

---

Cebeci F, Onsun N, Mert M. Insulin resistance in women with hirsutism. *Arch Med Sci*. 2012 May 9;8(2):342-6. PubMed PMID: 22662009; PubMed Central PMCID: PMC3361048.

Celik C, Abali R, Guzel S, Bastu E, Kucukyalcin V, Yilmaz M. Elevated circulating levels of YKL-40 are a marker of abnormal glucose tolerance in women with polycystic ovary syndrome. *Clin Endocrinol (Oxf)*. 2012 May 14. PubMed PMID: 22583189.

Celik O, Acbay O. Effects of metformin plus rosuvastatin on hyperandrogenism in polycystic ovary syndrome patients with hyperlipidemia and impaired glucose tolerance. *J Endocrinol Invest*. 2012 Apr 18. PubMed PMID: 22522778.

Chazenbalk G, Chen YH, Heneidi S, Lee JM, Pall M, Chen YD, Azziz R. Abnormal expression of genes involved in inflammation, lipid metabolism, and Wnt signaling in the adipose tissue of polycystic ovary syndrome. *J Clin Endocrinol Metab*. 2012 May;97(5):E765-70. PubMed PMID: 22344199; PubMed Central PMCID: PMC3339894.

Chen MJ, Han DS, Yang JH, Yang YS, Ho HN, Yang WS. Myostatin and its association with abdominal obesity, androgen and follistatin levels in women with polycystic ovary syndrome. *Hum Reprod*. 2012 Aug;27(8):2476-83. PubMed PMID: 22693174.

Cinar N, Harmanci A, Bayraktar M, Yildiz BO. Ethinyl estradiol-drospirenone versus ethinyl estradiol-drospirenone plus metformin in the treatment of lean women with polycystic ovary syndrome. *Clin Endocrinol (Oxf)*. 2012 Apr 18. PubMed PMID: 22509734.

Donà G, Sabbadin C, Fiore C, Bragadin M, Giorgino FL, Ragazzi E, Clari G, Bordin L, Armanini D. Inositol administration reduces oxidative stress in erythrocytes of patients with polycystic ovary syndrome. *Eur J Endocrinol*. 2012 Apr;166(4):703-10. PubMed PMID: 22223702.

Dong Z, Chen X, Li L, Huang J, Yin Q, Yang D. Free testosterone level correlated with the metabolic abnormalities dependent on central obesity in women with polycystic ovary syndrome. *Exp Clin Endocrinol Diabetes*. 2012 Jun;120(6):355-60. PubMed PMID: 22576257.

Du Q, Wang YJ, Yang S, Wu B, Han P, Zhao YY. A systematic review and meta-analysis of randomized controlled trials comparing pioglitazone versus metformin in the treatment of polycystic ovary syndrome. *Curr Med Res Opin*. 2012 May;28(5):723-30. PubMed PMID: 22462531.

Eilertsen TB, Vanky E, Carlsen SM. Anti-Mullerian hormone in the diagnosis of polycystic ovary syndrome: can morphologic description be replaced? *Hum Reprod*. 2012 Aug;27(8):2494-502. PubMed PMID: 22693172.

Escobar-Morreale HF. Iron metabolism and the polycystic ovary syndrome. *Trends Endocrinol Metab*. 2012 Oct;23(10):509-15. PubMed PMID: 22579050.

Escobar-Morreale HF, Samino S, Insenser M, Vinaixa M, Luque-Ramírez M, Lasunción MA, Correig X. Metabolic heterogeneity in polycystic ovary syndrome is determined by obesity: plasma metabolomic approach using GC-MS. *Clin Chem*. 2012 Jun;58(6):999-1009. PubMed PMID: 22427353.



# ANDROGEN EXCESS AND PCOS SOCIETY

---

Espinós-Gómez JJ, Rodríguez-Espinosa J, Ordóñez-Llanos J, Calaf-Alsina J. Metabolic syndrome in Mediterranean women with polycystic ovary syndrome: when and how to predict its onset. *Gynecol Endocrinol*. 2012 Apr;28(4):264-8 PubMed PMID: 21962027.

Firouzabadi Rd, Aflatoonian A, Modarresi S, Sekhavat L, MohammadTaheri S. Therapeutic effects of calcium & vitamin D supplementation in women with PCOS. *Complement Ther Clin Pract*. 2012 May;18(2):85-8. PubMed PMID: 22500844.

Franconi F, Campesi I, Occhioni S, Tonolo G. Sex-gender differences in diabetes vascular complications and treatment. *Endocr Metab Immune Disord Drug Targets*. 2012 Jun;12(2):179-96. PubMed PMID: 22236023.

Gambineri A, Patton L, Altieri P, Pagotto U, Pizzi C, Manzoli L, Pasquali R. Polycystic ovary syndrome is a risk factor for type 2 diabetes: results from a long-term prospective study. *Diabetes*. 2012 Sep;61(9):2369-74. PubMed PMID: 22698921; PubMed Central PMCID: PMC3425413.

Gao L, Zhao FL, Li SC. Statin is a reasonable treatment option for patients with Polycystic Ovary Syndrome: a meta-analysis of randomized controlled trials. *Exp Clin Endocrinol Diabetes*. 2012 Jun;120(6):367-75. PubMed PMID: 22639397.

Gateva AT, Kamenov ZA. Markers of visceral obesity and cardiovascular risk in patients with polycystic ovarian syndrome. *Eur J Obstet Gynecol Reprod Biol*. 2012 Oct;164(2):161-6. PubMed PMID: 22727921.

Genazzani AD, Prati A, Santagni S, Ricchieri F, Chierchia E, Rattighieri E, Campedelli A, Simoncini T, Artini PG. Differential insulin response to myo-inositol administration in obese polycystic ovary syndrome patients. *Gynecol Endocrinol*. 2012 May 21. PubMed PMID: 22612517.

Golbahar J, Al-Ayadhi M, Das NM, Gumaa K. Sensitive and specific markers for insulin resistance, hyperandrogenemia, and inappropriate gonadotrophin secretion in women with polycystic ovary syndrome: a case-control study from Bahrain. *Int J Womens Health*. 2012;4:201-6. PubMed PMID: 22654525; PubMed Central PMCID: PMC3363136.

Golbahar J, Das NM, Al-Ayadhi MA, Gumaa K. Leptin-to-adiponectin, adiponectin-to-leptin ratios, and insulin are specific and sensitive markers associated with polycystic ovary syndrome: a case-control study from Bahrain. *Metab Syndr Relat Disord*. 2012 Apr;10(2):98-102. PubMed PMID: 22107332.

González F, Nair KS, Daniels JK, Basal E, Schimke JM, Blair HE. Hyperandrogenism sensitizes leukocytes to hyperglycemia to promote oxidative stress in lean reproductive-age women. *J Clin Endocrinol Metab*. 2012 Aug;97(8):2836-43. PubMed PMID: 22569241; PubMed Central PMCID: PMC3410256.

Harmanci A, Cinar N, Bayraktar M, Yildiz BO. Oral Contraceptive Plus Anti-Androgen Therapy And Cardiometabolic Risk In Polycystic Ovary Syndrome. *Clin Endocrinol (Oxf)*. 2012 Jun 15. PubMed PMID: 22702394.

Hernández-Yero A, Santana Pérez F, Ovies Carballo G, Cabrera-Rode E. Diamel therapy in polycystic ovary syndrome reduces hyperinsulinaemia, insulin resistance, and hyperandrogenaemia. *Int J Endocrinol*. 2012;2012:382719. PubMed PMID: 22778733; PubMed Central PMCID: PMC3388435.



# ANDROGEN EXCESS AND PCOS SOCIETY

---

Hong Y, Zhao XM, Huang LL, Li L, Chen XL, Yang DZ. Serum visfatin is elevated in Chinese women with polycystic ovary syndrome, but might not be a reliable predictor of their glucose intolerance. *J Biol Regul Homeost Agents*. 2012 Apr-Jun;26(2):221-9. PubMed PMID: 22824749.

Hutchison SK, Teede HJ, Rachoń D, Harrison CL, Strauss BJ, Stepto NK. Effect of exercise training on insulin sensitivity, mitochondria and computed tomography muscle attenuation in overweight women with and without polycystic ovary syndrome. *Diabetologia*. 2012 May;55(5):1424-34. PubMed PMID: 22246378.

Ilie IR, Marian I, Mocan T, Ilie R, Mocan L, Duncea I, Pepene CE. Ethinylestradiol30µg-drospirenone and metformin: could this combination improve endothelial dysfunction in polycystic ovary syndrome? *BMC Endocr Disord*. 2012 Jun 19;12:9. PubMed PMID: 22713099; PubMed Central PMCID: PMC3413550.

Joham AE, Teede HJ, Hutchison SK, Stepto NK, Harrison CL, Paul E, Watt MJ. Pigment epithelium-derived factor, insulin sensitivity and adiposity in polycystic ovary syndrome: impact of exercise training. *Obesity (Silver Spring)*. 2012 May 29. PubMed PMID: 22641183.

Karabulut A, Demirlenk S, Sevket O. Effects of ethinyl estradiol-cyproterone acetate treatment on metabolic syndrome, fat distribution and carotid intima media thickness in polycystic ovary syndrome. *Gynecol Endocrinol*. 2012 Apr;28(4):245-8. PubMed PMID: 21961995.

Kaya MG, Calapkorur B, Karaca Z, Yildirim S, Celik A, Akpek M, Unluhizarci K, Kelestimur F. The Effects Of Treatment With Drospirenone/Ethinyl Estradiol Alone Or In Combination With Metformin On Elastic Properties Of Aorta In Women With Polycystic Ovary Syndrome. *Clin Endocrinol (Oxf)*. 2012 May 7. PubMed PMID: 22563947.

Kim JJ, Choi YM, Cho YM, Jung HS, Chae SJ, Hwang KR, Hwang SS, Ku SY, Kim SH, Kim JG, Moon SY. Prevalence of elevated glycated hemoglobin in women with polycystic ovary syndrome. *Hum Reprod*. 2012 May;27(5):1439-44. PubMed PMID: 22357766.

Kim JW, Han JE, Kim YS, Won HJ, Yoon TK, Lee WS. High sensitivity C-reactive protein and its relationship with impaired glucose regulation in lean patients with polycystic ovary syndrome. *Gynecol Endocrinol*. 2012 Apr;28(4):259-63. PubMed PMID: 21970575.

Krentz AJ, von Mühlen D, Barrett-Connor E. Adipocytokine profiles in a putative novel postmenopausal polycystic ovary syndrome (PCOS) phenotype parallel those in premenopausal PCOS: the Rancho Bernardo Study. *Metabolism*. 2012 Sep;61(9):1238-41. PubMed PMID: 22560129.

Kulshreshtha B, Gupta N, Ganie MA, Ammini AC. Effect of metformin and spironolactone therapy on OGTT in patients with polycystic ovarian syndrome - a retrospective analysis. *Gynecol Endocrinol*. 2012 Oct;28(10):823-6. PubMed PMID: 22475072.

Li W, Li Q. Dysregulation of glucose metabolism even in Chinese PCOS women with normal glucose tolerance. *Endocr J*. 2012 Sep 30;59(9):765-70. PubMed PMID: 22673295.

Mario FM, do Amarante F, Toscani MK, Spritzer PM. Lean Muscle Mass in Classic or Ovulatory PCOS: Association with Central Obesity and Insulin Resistance. *Exp Clin Endocrinol Diabetes*. 2012 Oct;120(9):511-6. PubMed PMID: 22576259.

# ANDROGEN EXCESS AND PCOS SOCIETY

---

Mehrabani HH, Salehpour S, Amiri Z, Farahani SJ, Meyer BJ, Tahbaz F. Beneficial effects of a high-protein, low-glycemic-load hypocaloric diet in overweight and obese women with polycystic ovary syndrome: a randomized controlled intervention study. *J Am Coll Nutr.* 2012 Apr;31(2):117-25. PubMed PMID: 22855917.

Misichronis G, Georgopoulos NA, Marioli DJ, Armeni AK, Katsikis I, Piouka AD, Saltamavros AD, Roupas ND, Panidis D. The influence of obesity on androstenedione to testosterone ratio in women with polycystic ovary syndrome (PCOS) and hyperandrogenemia. *Gynecol Endocrinol.* 2012 Apr;28(4):249-52. PubMed PMID: 21970600.

Nordio M, Proietti E. The combined therapy with myo-inositol and D-chiro-inositol reduces the risk of metabolic disease in PCOS overweight patients compared to myo-inositol supplementation alone. *Eur Rev Med Pharmacol Sci.* 2012 May;16(5):575-81. PubMed PMID: 22774396.

Olszanecka-Glinianowicz M, Madej P, Zdun D, Bożentowicz-Wikarek M, Sikora J, Chudek J, Skałba P. Are plasma levels of visfatin and retinol-binding protein 4 (RBP4) associated with body mass, metabolic and hormonal disturbances in women with polycystic ovary syndrome? *Eur J Obstet Gynecol Reprod Biol.* 2012 May;162(1):55-61. PubMed PMID: 22397743.

Pelusi C, Forlani G, Zanotti L, Gambineri A, Pasquali R. No metabolic impact of surgical normalization of hyperandrogenism in postmenopausal women with ovarian androgen secreting tumours. *Clin Endocrinol (Oxf).* 2012 May 14. PubMed PMID: 22583337.

Pepene CE. Soluble platelet/endothelial cell adhesion molecule (sPECAM)-1 is increased in polycystic ovary syndrome and related to endothelial dysfunction. *Gynecol Endocrinol.* 2012 May;28(5):370-4. PubMed PMID: 22456311.

Rajagopal G, Reddy AP, Venkata Harinarayan C, Suresh V, Bitla A, P V L N Rao S, Sachan A. Effect of lifestyle modification and metformin therapy on emerging cardiovascular risk factors in overweight Indian women with polycystic ovary syndrome. *Metab Syndr Relat Disord.* 2012 Aug;10(4):273-9. PubMed PMID: 22468948.

Sahin I, Celik O, Celik N, Keskin L, Dogru A, Dogru I, Yürekli M, Yologlu S. Adrenomedullin: possible predictor of insulin resistance in women with polycystic ovary syndrome. *J Endocrinol Invest.* 2012 Jun;35(6):553-6. PubMed PMID: 21791966.

Sathyapalan T, Atkin SL. Recent advances in cardiovascular aspects of polycystic ovary syndrome. *Eur J Endocrinol.* 2012 Apr;166(4):575-83. PubMed PMID: 22096112.

Stears A, O'Rahilly S, Semple RK, Savage DB. Metabolic insights from extreme human insulin resistance phenotypes. *Best Pract Res Clin Endocrinol Metab.* 2012 Apr;26(2):145-57. PubMed PMID: 22498245.

Sun L, Hu W, Liu Q, Hao Q, Sun B, Zhang Q, Mao S, Qiao J, Yan X. Metabonomics reveals plasma metabolic changes and inflammatory marker in polycystic ovary syndrome patients. *J Proteome Res.* 2012 May 4;11(5):2937-46. PubMed PMID: 22428626.

Svensen PF, Christiansen M, Hedley PL, Nilas L, Pedersen SB, Madsbad S. Adipose expression of adipocytokines in women with polycystic ovary syndrome. *Fertil Steril.* 2012 Jul;98(1):235-41. PubMed PMID: 22607892.

# ANDROGEN EXCESS AND PCOS SOCIETY

---

Thomson RL, Brinkworth GD, Noakes M, Clifton PM, Norman RJ, Buckley JD. The effect of diet and exercise on markers of endothelial function in overweight and obese women with polycystic ovary syndrome. *Hum Reprod.* 2012 Jul;27(7):2169-76. PubMed PMID: 22552687.

Trakakis E, Basios G, Peppas M, Simeonidis G, Labos G, Creatsa M, Misailidou M, Boutati E, Vaggopoulos V, Panagopoulos P, Dimitriades G, Kassanos D. The prevalence of glucose metabolism abnormalities in Greek women with polycystic ovary syndrome. *Gynecol Endocrinol.* 2012 Nov;28(11):867-70. PubMed PMID: 22571176.

Wongwananuruk T, Rattanachaiyanont M, Leerasiri P, Indhavivadhana S, Techatraisak K, Angsuwathana S, Tanmahasamut P, Dangrat C. The Usefulness of Homeostatic Measurement Assessment-Insulin Resistance (HOMA-IR) for Detection of Glucose Intolerance in Thai Women of Reproductive Age with Polycystic Ovary Syndrome. *Int J Endocrinol.* 2012;2012:571035. PubMed PMID: 22737168; PubMed Central PMCID: PMC3378956.

Xiang SK, Hua F, Tang Y, Jiang XH, Zhuang Q, Qian FJ. Relationship between Serum Lipoprotein Ratios and Insulin Resistance in Polycystic Ovary Syndrome. *Int J Endocrinol.* 2012;2012:173281. PubMed PMID: 22792101; PubMed Central PMCID: PMC3389691.

Zhang J, Fan P, Liu H, Bai H, Wang Y, Zhang F. Apolipoprotein A-I and B levels, dyslipidemia and metabolic syndrome in south-west Chinese women with PCOS. *Hum Reprod.* 2012 Aug;27(8):2484-93. PubMed PMID: 22674204.

## **PCOS – Neuroendocrine Dysfunction**

Nair S, Al-Hendy A, Tamboli RA, Marks-Shulman PA, Abumrad NN. Increased COMT expression in PCOS biology. *Mol Cell Endocrinol.* 2012 May 15;355(1):188-9. PubMed PMID: 22342814.

Russo N, Russo M, Daino D, Bucci F, Pluchino N, Casarosa E, Artini PG, Cela V, Luisi M, Genazzani AR. Polycystic ovary syndrome: brain-derived neurotrophic factor (BDNF) plasma and follicular fluid levels. *Gynecol Endocrinol.* 2012 Apr;28(4):241-4. PubMed PMID: 22420627.

## **PCOS – Ovary**

Abu Hashim H. Clomiphene citrate alternatives for the initial management of polycystic ovary syndrome: an evidence-based approach. *Arch Gynecol Obstet.* 2012 Jun;285(6):1737-45. PubMed PMID: 22392485.

Agarwal A, Aponte-Mellado A, Premkumar BJ, Shaman A, Gupta S. The effects of oxidative stress on female reproduction: a review. *Reprod Biol Endocrinol.* 2012 Jun 29;10(1):49. PubMed PMID: 22748101.

Arya BK, Haq AU, Chaudhury K. Oocyte quality reflected by follicular fluid analysis in polycystic ovary syndrome (PCOS): a hypothesis based on intermediates of energy metabolism. *Med Hypotheses.* 2012 Apr;78(4):475-8. PubMed PMID: 22336088.

Baghdadi LR, Abu Hashim H, Amer SA, Palomba S, Falbo A, Al-Ojaimi E, Ott J, Zhu W, Fernandez H, Nasr A, Ramzy AM, Clark J, Doi SA. Impact of obesity on reproductive outcomes after ovarian ablative therapy in

# ANDROGEN EXCESS AND PCOS SOCIETY

---

PCOS: a collaborative meta-analysis. *Reprod Biomed Online*. 2012 Sep;25(3):227-41. PubMed PMID: 22809865.

Casadei L, Puca F, Emidi E, Manicuti C, Madrigale A, Piccione E. Sequential low-dose step-up and step-down protocols with recombinant follicle-stimulating hormone in polycystic ovary syndrome: prospective comparison with step-down protocol. *Arch Gynecol Obstet*. 2012 Nov;286(5):1291-7. PubMed PMID: 22729136.

Casper RF. Detrimental effect of induced or spontaneous menses before ovulation induction on pregnancy outcome in patients with polycystic ovary syndrome. *Obstet Gynecol*. 2012 May;119(5):886-7. PubMed PMID: 22525898.

Costello MF, Ledger WL. Evidence-based lifestyle and pharmacological management of infertility in women with polycystic ovary syndrome. *Womens Health (Lond Engl)*. 2012 May;8(3):277-90. PubMed PMID: 22554175.

Costello MF, Ledger WL. Evidence-based management of infertility in women with polycystic ovary syndrome using surgery or assisted reproductive technology. *Womens Health (Lond Engl)*. 2012 May;8(3):291-300. PubMed PMID: 22554176.

Costello MF, Misso ML, Wong J, Hart R, Rombauts L, Melder A, Norman RJ, Teede HJ. The treatment of infertility in polycystic ovary syndrome: a brief update. *Aust N Z J Obstet Gynaecol*. 2012 Aug;52(4):400-3. PubMed PMID: 22639834.

Evans JJ, Anderson GM. Balancing ovulation and anovulation: integration of the reproductive and energy balance axes by neuropeptides. *Hum Reprod Update*. 2012 May-Jun;18(3):313-32. PubMed PMID: 22442260.

Farquhar C, Brown J, Marjoribanks J. Laparoscopic drilling by diathermy or laser for ovulation induction in anovulatory polycystic ovary syndrome. *Cochrane Database Syst Rev*. 2012 Jun 13;6:CD001122. PubMed PMID: 22696324.

Gomes VA, Vieira CS, Jacob-Ferreira AL, Belo VA, Soares GM, França JB, Ferriani RA, Tanus-Santos JE. Oral contraceptive containing chlormadinone acetate and ethinylestradiol reduces plasma concentrations of matrix metalloproteinase-2 in women with polycystic ovary syndrome. *Basic Clin Pharmacol Toxicol*. 2012 Sep;111(3):211-6. PubMed PMID: 22510229.

Gremeau AS, Andreadis N, Fatum M, Craig J, Turner K, McVeigh E, Child T. In vitro maturation or in vitro fertilization for women with polycystic ovaries? A case-control study of 194 treatment cycles. *Fertil Steril*. 2012 Aug;98(2):355-60. PubMed PMID: 22658347.

Grynnerup A, Lindhard A, Sørensen S. The role of anti-Müllerian hormone in female fertility and infertility-an overview. *Acta Obstet Gynecol Scand*. 2012 May 31. PubMed PMID: 22646322.

Gungor Ugurlucan F, Iyibozkurt AC, Baysal B. Ovarian hyperstimulation syndrome in a patient with frozen-thawed embryo transfer and dichorionic diamniotic pregnancy. *Arch Gynecol Obstet*. 2012 Jun;285(6):1759-61. PubMed PMID: 22203091.

Harlow SD, Gass M, Hall JE, Lobo R, Maki P, Rebar RW, Sherman S, Sluss PM, de Villiers TJ; STRAW + 10 Collaborative Group. Executive summary of the Stages of Reproductive Aging Workshop + 10: addressing the

# ANDROGEN EXCESS AND PCOS SOCIETY

---

unfinished agenda of staging reproductive aging. *Fertil Steril.* 2012 Apr;97(4):843-51. PubMed PMID: 22341880; PubMed Central PMCID: PMC3340904.

He H, Li T, Yin D, Liu R, Chen Q, Wang J, Zhong G, Pu D. HOXA10 expression is decreased by testosterone in luteinized granulosa cells in vitro. *Mol Med Report.* 2012 Jul;6(1):51-6. doi: 10.3892/mmr.2012.875. PubMed PMID: 22576737.

Hossein G, Arabzadeh S, Hossein-Rashidi B, Hosseini MA. Relations between steroids and AMH: impact of basal and intrafollicular steroids to AMH ratios on oocyte yield and maturation rate in women with or without polycystic ovary undergoing in vitro fertilization. *Gynecol Endocrinol.* 2012 Jun;28(6):413-7. PubMed PMID: 21992510.

Hsueh AJ, Rauch R. Ovarian Kaleidoscope database: ten years and beyond. *Biol Reprod.* 2012 Jun 28;86(6):192. PubMed PMID: 22441797; PubMed Central PMCID: PMC3386152.

Imbar T, Klipper E, Greenfield C, Hurwitz A, Haimov-Kochman R, Meidan R. Altered endothelin expression in granulosa-lutein cells of women with polycystic ovary syndrome. *Life Sci.* 2012 Oct 15;91(13-14):703-9. PubMed PMID: 22727793.

Jayaprakasan K, Chan Y, Islam R, Haoula Z, Hopkisson J, Coomarasamy A, Raine-Fenning N. Prediction of in vitro fertilization outcome at different antral follicle count thresholds in a prospective cohort of 1,012 women. *Fertil Steril.* 2012 Sep;98(3):657-63. PubMed PMID: 22749225.

Karjane NW, Cheang KI, Mandolesi GA, Stovall DW. Persistence with oral contraceptive pills versus metformin in women with polycystic ovary syndrome. *J Womens Health (Larchmt).* 2012 Jun;21(6):690-4. PubMed PMID: 22324645.

Kol S, Homburg R, Alsbjerg B, Humaidan P. The gonadotropin-releasing hormone antagonist protocol--the protocol of choice for the polycystic ovary syndrome patient undergoing controlled ovarian stimulation. *Acta Obstet Gynecol Scand.* 2012 Jun;91(6):643-7. PubMed PMID: 22428986.

Kuivasaari-Pirinen P, Raatikainen K, Hippeläinen M, Heinonen S. Adverse Outcomes of IVF/ICSI Pregnancies Vary Depending on Aetiology of Infertility. *ISRN Obstet Gynecol.* 2012;2012:451915. PubMed PMID: 22570795; PubMed Central PMCID: PMC3337484.

Lee HJ, Ku SY, Kim SH, Choi YM, Kim JG, Moon SY. A comparative study on the impact of fresh variables on the success of frozen-thawed embryo transfer cycles using 2PN sibling embryos in women with/without polycystic ovary syndrome. *Gynecol Endocrinol.* 2012 May;28(5):351-5. PubMed PMID: 22103769.

Li RH, Ng EH. Management of anovulatory infertility. *Best Pract Res Clin Obstet Gynaecol.* 2012 Dec;26(6):757-68. PubMed PMID: 22703626.

Misso ML, Wong JL, Teede HJ, Hart R, Rombauts L, Melder AM, Norman RJ, Costello MF. Aromatase inhibitors for PCOS: a systematic review and meta-analysis. *Hum Reprod Update.* 2012 May-Jun;18(3):301-12. PubMed PMID: 22431566.



# ANDROGEN EXCESS AND PCOS SOCIETY

---

Mohsen IA. A randomized controlled trial of the effect of rosiglitazone and clomiphene citrate versus clomiphene citrate alone in overweight/obese women with polycystic ovary syndrome. *Gynecol Endocrinol*. 2012 Apr;28(4):269-72. PubMed PMID: 21970545.

Nahid L, Sirous K. Comparison of the effects of letrozole and clomiphene citrate for ovulation induction in infertile women with polycystic ovary syndrome. *Minerva Ginecol*. 2012 Jun;64(3):253-8. PubMed PMID: 22635021.

Norman RJ. Does ovulation induction with follicle-stimulating hormone still have a future in polycystic ovary syndrome? *Fertil Steril*. 2012 Sep;98(3):599. PubMed PMID: 22575496.

Ortega I, Villanueva JA, Wong DH, Cress AB, Sokalska A, Stanley SD, Duleba AJ. Resveratrol reduces steroidogenesis in rat ovarian theca-interstitial cells: the role of inhibition of Akt/PKB signaling pathway. *Endocrinology*. 2012 Aug;153(8):4019-29. PubMed PMID: 22719052; PubMed Central PMCID: PMC3404354.

Orvieto R, Meltzer S, Liberty G, Rabinson J, Anteby EY, Nahum R. Does day-3 LH/FSH ratio influence in vitro fertilization outcome in PCOS patients undergoing controlled ovarian hyperstimulation with different GnRH-analogue? *Gynecol Endocrinol*. 2012 Jun;28(6):422-4. PubMed PMID: 22578028.

Ott J, Wattar L, Kurz C, Seemann R, Huber JC, Mayerhofer K, Vytiska-Binstorfer E. Parameters for calcium metabolism in women with polycystic ovary syndrome who undergo clomiphene citrate stimulation: a prospective cohort study. *Eur J Endocrinol*. 2012 May;166(5):897-902. PubMed PMID: 22330149.

Ou XH, Li S, Wang ZB, Li M, Quan S, Xing F, Guo L, Chao SB, Chen Z, Liang XW, Hou Y, Schatten H, Sun QY. Maternal insulin resistance causes oxidative stress and mitochondrial dysfunction in mouse oocytes. *Hum Reprod*. 2012 Jul;27(7):2130-45. PubMed PMID: 22556376.

Ouandaogo ZG, Frydman N, Hesters L, Assou S, Haouzi D, Dechaud H, Frydman R, Hamamah S. Differences in transcriptomic profiles of human cumulus cells isolated from oocytes at GV, MI and MII stages after in vivo and in vitro oocyte maturation. *Hum Reprod*. 2012 Aug;27(8):2438-47. PubMed PMID: 22617121.

Palihawadana TS, Wijesinghe PS, Seneviratne HR. Aetiology of infertility among females seeking treatment at a tertiary care hospital in Sri Lanka. *Ceylon Med J*. 2012 Jun;57(2):79-83. PubMed PMID: 22772786.

Peng C, Guo Z, Long X, Lu G. Progesterone levels on the hCG day and outcomes in vitro fertilization in women with polycystic ovary syndrome. *J Assist Reprod Genet*. 2012 Jul;29(7):603-7. PubMed PMID: 22552733; PubMed Central PMCID: PMC3401251.

Petríková J, Lazúrová I. Ovarian failure and polycystic ovary syndrome. *Autoimmun Rev*. 2012 May;11(6-7):A471-8. PubMed PMID: 22154711.

Purcell SH, Chi MM, Moley KH. Insulin-stimulated glucose uptake occurs in specialized cells within the cumulus oocyte complex. *Endocrinology*. 2012 May;153(5):2444-54. PubMed PMID: 22408172; PubMed Central PMCID: PMC3339650.

Rosenfield RL, Wroblewski K, Padmanabhan V, Littlejohn E, Mortensen M, Ehrmann DA. Antimüllerian hormone levels are independently related to ovarian hyperandrogenism and polycystic ovaries. *Fertil Steril*. 2012 Jul;98(1):242-9. PubMed PMID: 22541936.



# ANDROGEN EXCESS AND PCOS SOCIETY

---

Salehpour S, Akbari Sene A, Saharkhiz N, Sohrabi MR, Moghimian F. N-acetylcysteine as an adjuvant to clomiphene citrate for successful induction of ovulation in infertile patients with polycystic ovary syndrome. *J Obstet Gynaecol Res.* 2012 Sep;38(9):1182-6. PubMed PMID: 22540635.

Siebert TI, Viola MI, Steyn DW, Kruger TF. Is metformin indicated as primary ovulation induction agent in women with PCOS? A systematic review and meta-analysis. *Gynecol Obstet Invest.* 2012;73(4):304-13. PubMed PMID: 22516925.

Tang T, Lord JM, Norman RJ, Yasmin E, Balen AH. Insulin-sensitising drugs (metformin, rosiglitazone, pioglitazone, D-chiro-inositol) for women with polycystic ovary syndrome, oligo amenorrhoea and subfertility. *Cochrane Database Syst Rev.* 2012 May 16;5:CD003053. PubMed PMID: 22592687.

Thomopoulos C, Tsioufis C, Michalopoulou H, Makris T, Papademetriou V, Stefanadis C. Assisted reproductive technology and pregnancy-related hypertensive complications: a systematic review. *J Hum Hypertens.* 2012 Apr 12. PubMed PMID: 22495105.

Tosi F, Negri C, Perrone F, Dorizzi R, Castello R, Bonora E, Moghetti P. Hyperinsulinemia amplifies GnRH agonist stimulated ovarian steroid secretion in women with polycystic ovary syndrome. *J Clin Endocrinol Metab.* 2012 May;97(5):1712-9. PubMed PMID: 22419715.

Usta T, Oral E. Is the measurement of anti-Müllerian hormone essential? *Curr Opin Obstet Gynecol.* 2012 Jun;24(3):151-7. PubMed PMID: 22487725.

Velazquez MA, Hadelér KG, Herrmann D, Kues WA, Rémy B, Beckers JF, Niemann H. In vivo oocyte IGF-1 priming increases inner cell mass proliferation of in vitro-formed bovine blastocysts. *Theriogenology.* 2012 Aug;78(3):517-27. PubMed PMID: 22538004.

Veltman-Verhulst SM, Fauser BC, Eijkemans MJ. High singleton live birth rate confirmed after ovulation induction in women with anovulatory polycystic ovary syndrome: validation of a prediction model for clinical practice. *Fertil Steril.* 2012 Sep;98(3):761-768.e1. PubMed PMID: 22633255.

Verit FF. The prevalence of metabolic syndrome in clomiphene citrate resistant polycystic ovary syndrome. *Gynecol Endocrinol.* 2012 May;28(5):365-9. PubMed PMID: 22409701.

Vosnakis C, Georgopoulos NA, Armeni AK, Papadakis E, Roupas ND, Katsikis I, Panidis D. Sibutramine administration decreases serum anti-Müllerian hormone (AMH) levels in women with polycystic ovary syndrome. *Eur J Obstet Gynecol Reprod Biol.* 2012 Aug;163(2):185-9. PubMed PMID: 22579228.

Will MA, Palaniappan M, Peegel H, Kayampilly P, Menon KM. Metformin: direct inhibition of rat ovarian theca-interstitial cell proliferation. *Fertil Steril.* 2012 Jul;98(1):207-14. PubMed PMID: 22608319; PubMed Central PMCID: PMC3389190.

Woo HY, Kim KH, Rhee EJ, Park H, Lee MK. Differences of the association of anti-Müllerian hormone with clinical or biochemical characteristics between women with and without polycystic ovary syndrome. *Endocr J.* 2012 Sep 30;59(9):781-90. PubMed PMID: 22673409.

# ANDROGEN EXCESS AND PCOS SOCIETY

---

Xi W, Gong F, Lu G. Correlation of serum Anti-Müllerian hormone concentrations on day 3 of the in vitro fertilization stimulation cycle with assisted reproduction outcome in polycystic ovary syndrome patients. *J Assist Reprod Genet.* 2012 May;29(5):397-402. PubMed PMID: 22382641; PubMed Central PMCID: PMC3348272.

Zhong Y, Li J, Ying Y, Wu H, Zhou C, Xu Y, Wang Q, Li J, Shen X. The efficacy of conversion from IUI to IVF-ET in infertility patients with hyper-response to ovulation induction: a retrospective study. *Biomed Pap Med Fac Univ Palacky Olomouc Czech Repub.* 2012 Jun;156(2):159-63. PubMed PMID: 22837137.

Zhu W, Chen M, Fu Z, Li X, Qin C, Tang X, Chen X. Repeat transvaginal ultrasound-guided ovarian interstitial laser treatment improved the anovulatory status in women with polycystic ovarian syndrome. *Eur J Obstet Gynecol Reprod Biol.* 2012 May;162(1):50-4. PubMed PMID: 22397748.

## **PCOS – Phenotypic Variation**

Aziz M, Naver KV, Wissing ML, Mikkelsen AL, Nilas L, Skouby SO. Polycystic ovary syndrome: infertility, cardiovascular, metabolic and obstetrical risks, laboratory and clinical outcomes -- the PICOLO Study. *Gynecol Endocrinol.* 2012 Apr;28(4):253-8. PubMed PMID: 22217188.

Bell A, Meek CL, Viljoen A. Evidence of biochemical hyperandrogenism in women: the limitations of serum testosterone quantitation. *J Obstet Gynaecol.* 2012 May;32(4):367-71. PubMed PMID: 22519483.

ESHRE Capri Workshop Group. Health and fertility in World Health Organization group 2 anovulatory women. *Hum Reprod Update.* 2012 Sep-Oct;18(5):586-99. PubMed PMID: 22611175.

Movaseghi S, Dadgostar H, Dahaghin S, Chimeh N, Alenabi T, Dadgostar E, Davatchi F. Clinical manifestations of the female athlete triad among some Iranian athletes. *Med Sci Sports Exerc.* 2012 May;44(5):958-65. Erratum in: *Med Sci Sports Exerc.* 2012 Sep;44(9):1825. PubMed PMID: 21988934.

Rachoń D. Differential diagnosis of hyperandrogenism in women with polycystic ovary syndrome. *Exp Clin Endocrinol Diabetes.* 2012 Apr;120(4):205-9. PubMed PMID: 22421986.

Sanchón R, Gambineri A, Alpañés M, Martínez-García MÁ, Pasquali R, Escobar-Morreale HF. Prevalence of functional disorders of androgen excess in unselected premenopausal women: a study in blood donors. *Hum Reprod.* 2012 Apr;27(4):1209-16. PubMed PMID: 22343706.

Shannon M, Wang Y. Polycystic ovary syndrome: a common but often unrecognized condition. *J Midwifery Womens Health.* 2012 May-Jun;57(3):221-30. PubMed PMID: 22594862.

## **PCOS – Pregnancy Complications**

D'Anna R, Di Benedetto V, Rizzo P, Raffone E, Interdonato ML, Corrado F, Di Benedetto A. Myo-inositol may prevent gestational diabetes in PCOS women. *Gynecol Endocrinol.* 2012 Jun;28(6):440-2. PubMed PMID: 22122627.

Eftekhari M, Khalili MA, Aflatoonian A, Esfandiari N. Successful pregnancy following a novel endometrial preparation in a PCOS patient undergoing IVM: a case report. *J Assist Reprod Genet.* 2012 Apr;29(4):335-6. PubMed PMID: 22350529; PubMed Central PMCID: PMC3309990.

# ANDROGEN EXCESS AND PCOS SOCIETY

---

Ghazeeri GS, Nassar AH, Younes Z, Awwad JT. Pregnancy outcomes and the effect of metformin treatment in women with polycystic ovary syndrome: an overview. *Acta Obstet Gynecol Scand.* 2012 Jun;91(6):658-78. PubMed PMID: 22375613.

Legro RS, Kunselman AR, Brzyski RG, Casson PR, Diamond MP, Schlaff WD, Christman GM, Coutifaris C, Taylor HS, Eisenberg E, Santoro N, Zhang H; NICHD Reproductive Medicine Network. The Pregnancy in Polycystic Ovary Syndrome II (PPCOS II) trial: rationale and design of a double-blind randomized trial of clomiphene citrate and letrozole for the treatment of infertility in women with polycystic ovary syndrome. *Contemp Clin Trials.* 2012 May;33(3):470-81. PubMed PMID: 22265923; PubMed Central PMCID: PMC3312939.

Morin-Papunen L, Rantala AS, Unkila-Kallio L, Tiitinen A, Hippeläinen M, Perheentupa A, Tinkanen H, Bloigu R, Puukka K, Ruokonen A, Tapanainen JS. Metformin improves pregnancy and live-birth rates in women with polycystic ovary syndrome (PCOS): a multicenter, double-blind, placebo-controlled randomized trial. *J Clin Endocrinol Metab.* 2012 May;97(5):1492-500. PubMed PMID: 22419702.

Palomba S, Falbo A, Russo T, Rivoli L, Orio M, Cosco AG, Vero R, Capula C, Tolino A, Zullo F, Colao A, Orio F. The risk of a persistent glucose metabolism impairment after gestational diabetes mellitus is increased in patients with polycystic ovary syndrome. *Diabetes Care.* 2012 Apr;35(4):861-7. PubMed PMID: 22338097; PubMed Central PMCID: PMC3308296.

Palomba S, Russo T, Falbo A, Di Cello A, Amendola G, Mazza R, Tolino A, Zullo F, Tucci L, La Sala GB. Decidual endovascular trophoblast invasion in women with polycystic ovary syndrome: an experimental case-control study. *J Clin Endocrinol Metab.* 2012 Jul;97(7):2441-9. PubMed PMID: 22508703.

Reyes-Muñoz E, Castellanos-Barroso G, Ramírez-Eugenio BY, Ortega-González C, Parra A, Castillo-Mora A, De la Jara-Díaz JF. The risk of gestational diabetes mellitus among Mexican women with a history of infertility and polycystic ovary syndrome. *Fertil Steril.* 2012 Jun;97(6):1467-71. PubMed PMID: 22503417.

## **PCOS – Protocol Reviews**

None.

## **PCOS – Psychology**

Bazarganipour F, Ziaei S, Montazeri A, Faghihzadeh S, Frozanfard F. Psychometric properties of the Iranian version of modified polycystic ovary syndrome health-related quality-of-life questionnaire. *Hum Reprod.* 2012 Sep;27(9):2729-36. PubMed PMID: 22740491.

Cinar N, Harmanci A, Demir B, Yildiz BO. Effect of an oral contraceptive on emotional distress, anxiety and depression of women with polycystic ovary syndrome: a prospective study. *Hum Reprod.* 2012 Jun;27(6):1840-5. PubMed PMID: 22473394.

Eriksson O, Landén M, Sundblad C, Holte J, Eriksson E, Naessén T. Ovarian morphology in premenstrual dysphoria. *Psychoneuroendocrinology.* 2012 Jun;37(6):742-51. PubMed PMID: 21974977.

# ANDROGEN EXCESS AND PCOS SOCIETY

---

Kowalczyk R, Skrzypulec V, Lew-Starowicz Z, Nowosielski K, Grabski B, Merk W. Psychological gender of patients with polycystic ovary syndrome. *Acta Obstet Gynecol Scand.* 2012 Jun;91(6):710-4. PubMed PMID: 22443151.

Moran LJ, Deeks AA, Gibson-Helm ME, Teede HJ. Psychological parameters in the reproductive phenotypes of polycystic ovary syndrome. *Hum Reprod.* 2012 Jul;27(7):2082-8. PubMed PMID: 22493025.

Okoroafor UC, Jungheim ES. Incorporating patient preference into the management of infertility in women with polycystic ovary syndrome. *Patient Prefer Adherence.* 2012;6:407-15. Epub 2012 May 24. PubMed PMID: 22723725; PubMed Central PMCID: PMC3379865.

## **PCOS – Thyroid Complications**

None.

## **PCOS – Uterus**

Diamond MP, Kruger M, Santoro N, Zhang H, Casson P, Schlaff W, Coutifaris C, Brzyski R, Christman G, Carr BR, McGovern PG, Cataldo NA, Steinkampf MP, Gosman GG, Nestler JE, Carson S, Myers EE, Eisenberg E, Legro RS; Eunice Kennedy Shriver National Institute of Child Health and Human Development Cooperative Reproductive Medicine Network. Endometrial shedding effect on conception and live birth in women with polycystic ovary syndrome. *Obstet Gynecol.* 2012 May;119(5):902-8. PubMed PMID: 22525900.

Haoula Z, Salman M, Atiomo W. Evaluating the association between endometrial cancer and polycystic ovary syndrome. *Hum Reprod.* 2012 May;27(5):1327-31. PubMed PMID: 22367984.

Shang K, Jia X, Qiao J, Kang J, Guan Y. Endometrial abnormality in women with polycystic ovary syndrome. *Reprod Sci.* 2012 Jul;19(7):674-83. PubMed PMID: 22534323.

## **Premature Adrenarche**

Bird IM. In the zone: understanding zona reticularis function and its transformation by adrenarche. *J Endocrinol.* 2012 Aug;214(2):109-11. doi: 10.1530/JOE-12-0246

Murphy R, Ibáñez L, Hattersley A, Tost J. IGF2/H19 hypomethylation in a patient with very low birthweight, precocious pubarche and insulin resistance. *BMC Med Genet.* 2012 May 30;13:42

# ANDROGEN EXCESS AND PCOS SOCIETY

---

## Brief summaries of selected publications

### Congenital Adrenal Hyperplasia and Disorders of Steroidogenesis

Witchel SF, Miller WL. Prenatal treatment of congenital adrenal hyperplasia-not standard of care. *J Genet Couns.* 2012 Oct;21(5):615-24. doi: 10.1007/s10897-012-9508-8. Epub 2012 May 26.

Starting in the 1980's, supraphysiologic glucocorticoid treatment was used to decrease the virilization of the external genitalia of affected female fetuses. More recent clinical observations, results of animal studies and greater knowledge regarding the details of human fetal adrenal physiology raise concerns about the safety of this prenatal treatment. The pathophysiology of CAH and the safety and ethical considerations of prenatal dexamethasone treatment are reviewed in this article.

### PCOS - Adolescence

Eleftheriadou M, Michala L, Stefanidis K, Iliadis I, Lykeridou A, Antsaklis A. Exercise and sedentary habits among adolescents with PCOS. *J Pediatr Adolesc Gynecol.* 2012 Jun;25(3):172-4. doi: 10.1016/j.jpag.2011.11.009. Epub 2012 Jan 20.

The authors performed structured interviews to assess lifestyle habits of girls with PCOS. Specifically, they obtained information regarding the level of physical activity and sedentary habits of girls with PCOS (n=35) and compared them to controls (n=46). The authors report that girls with PCOS engaged in physical activities less than controls. Indeed, frequency and intensity of exercise was decreased among the girls with PCOS. The girls in the control groups were more often involved in sporting activities. The authors concluded that the athletic and sedentary habits of adolescents with PCOS may interact with other factors leading to obesity.

Raissouni N, Kolesnikov A, Purushothaman R, Sinha S, Bhandari S, Bhangoo A, Malik S, Mathew R, Baillargeon JP, Hernandez MI, Rosenbaum M, Ten S, Geller D. Altered glucose disposition and insulin sensitivity in peri-pubertal first-degree relatives of women with polycystic ovary syndrome. *Int J Pediatr Endocrinol.* 2012 May 29;2012(1):14. PubMed PMID: 22643321; PMCID: PMC3477027.

This is a cross-sectional study examining insulin-glucose dynamics in 18 early adolescent, first-degree female relatives of women with PCOS and 21 healthy, age-matched control adolescents without PCOS close relatives. The adolescent girls underwent anthropometric measurements, steroid profiling and frequently sampled Intravenous Glucose Tolerance Test (IVGTT), while Homeostasis Model Assessment (HOMA) index, Glucose Disposal Index (GDI), Acute Insulin Response (AIR) and Quantitative insulin sensitivity check index (QUICKI) were derived from IVGTT results. Adolescent girls with PCOS close relatives showed higher mean HOMA and lower GDI with no differences in mean age or BMI Z-score between the adolescent groups. The higher HOMA possibly reflects lowered insulin sensitivity and lower GDI may indicate poorer beta-cell function. These results suggest the presence of multiple risk factors for type 2 diabetes in early adolescent first-degree relatives of women with PCOS prior to onset of PCOS.

# ANDROGEN EXCESS AND PCOS SOCIETY

---

## PCOS – Ovary

**Tosi F, Negri C, Perrone F, Dorizzi R, Castello R, Bonora E, Moghetti P. Hyperinsulinemia amplifies GnRH agonist stimulated ovarian steroid secretion in women with polycystic ovary syndrome. J Clin Endocrinol Metab. 2012 May;97(5):1712-9. PubMed PMID: 22419715.**

As more evidence is reported in the literature, understanding of the direct and stimulatory effects of PCOS-associated hyperinsulinemia on ovarian androgen secretion is becoming clearer. This interesting study from the group in Verona, Italy, supports the concept that overproduction of insulin itself may stimulate ovarian androgen excess. Subjects with PCOS were well controlled as the adrenal contribution of androgens was suppressed during the hyperinsulinemic euglycemic clamp technique. High levels of insulin were required, supporting the finding of insulin resistance in these normal weight women, with significant ovarian androgen production induced by the high insulin. The prolonged 17-hour study, producing chronic rather than acute hyperinsulinemia, is more reflective of the PCOS condition. Improvement in insulin resistance with the use of insulin-sensitizing medication, lifestyle modification or both allows these patients to take direct control of their syndrome. Lowering of ovarian androgens may enhance their reproductive outcomes by correcting hyperinsulinemia and normalizing ovarian function, or at least by improving their response to ovulation induction and assisted reproduction. These subjects were nearly all of normal weight, which underscores the importance of screening all PCOS patients for insulin resistance and impaired glucose tolerance, and to subsequently consider insulin sensitization management in their fertility care.

## PCOS – Pregnancy Complications

**Morin-Papunen L, Rantala AS, Unkila-Kallio L, Tiitinen A, Hippeläinen M, Perheentupa A, Tinkanen H, Bloigu R, Puukka K, Ruukonen A, Tapanainen JS. Metformin improves pregnancy and live-birth rates in women with polycystic ovary syndrome (PCOS): a multicenter, double-blind, placebo-controlled randomized trial. J Clin Endocrinol Metab. 2012 May;97(5):1492-500. PubMed PMID: 22419702.**

The authors investigated whether metformin decreases the early miscarriage rate and improves the pregnancy rates (PR) and live-birth rates (LBR) in PCOS in this multicenter, randomized (1:1), double-blind, placebo-controlled study. Three hundred twenty women with PCOS and anovulatory infertility were randomized to metformin (n = 160, Diformin; obese women, 1000 mg two times daily; nonobese subjects, 500 mg + 1000 mg daily) or identical doses of placebo (n = 160). After 3 months of treatment, another appropriate infertility treatment was combined, if necessary. If pregnancy occurred, metformin/placebo was continued up to 12 weeks of gestation. Miscarriage rates were low and similar in the two groups (metformin 15.2% vs. placebo 17.9%, P = 0.8). Intent-to-treat analysis showed that metformin significantly improved PR and LBR (vs. placebo) in the whole study population (PR: 53.6 vs. 40.4%, P = 0.006; LBR: 41.9 vs. 28.8%, P = 0.014) and PR in obese women (49.0 vs. 31.4%, P = 0.04), and there was a similar trend in nonobese (PR:58.6 vs. 47.6%, P = 0.09; LBR: 46.7 vs. 34.5%, P = 0.09) and in obese women with regard to LBR (35.7 vs. 21.9%, P = 0.07). Cox regression analysis showed that metformin plus standard infertility treatment increased the chance of pregnancy 1.6 times (HR 1.6, 95% CI 1.13-2.27). They concluded that obese women with anovulatory infertility benefit from 3 months pretreatment with metformin and its combination with routine ovulation induction agents thereafter.