

**ANTIOVARIAN ANTIBODIES ASSESSMENT IN PATIENTS WITH  
POLYCYSTIC OVARY SYNDROME BEFORE AND AFTER LAPAROSCOPIC  
OVARIAN DRILLING**

*Thesis*  
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*Obstetrics and Gynecology*

*By*  
**Mohamed Gamal Ismail Sayed**  
Resident of Obstetrics & Gynecology  
Elsahel Teaching Hospital

**Supervised by**  
**Professor/ Rowaa Abdelazeem Mostafa**  
*Professor of Obstetrics and Gynecology*  
*Ain Shams University*

**Professor / Mohammed Sayed Ali**  
*Assistant Professor of Obstetrics and Gynecology*  
*Ain Shams University*

*Faculty of Medicine*  
*Ain Shams University*  
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# REFERENCES

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## References

- **Abd el Gadir a, Khatim MS, Mowafi RS, et al, (1990):** Hormonal changes in patients with polycystic ovarian disease after ovarian electrocautery or pituitary desensitization. *Clin Endocrinol.*; 32:749-54.
- **Abd el Gadir A, Khatim MS, Alnaser HMI, et al, (1993):** Ovarian electrocautery: responders vs. non-responders. *Gynecol Endocrinol.*; 7: 4 – 8.
- **Adams J, Poloson DW and Franks S (1995):** multifollicular ovaries: clinical and endocrine features and response to pulsatile gonadotropine-releasing hormone study. *Lancet* ii; 1375-8.
- **Alzubaidi, NH, Chapin, HL, Vanderhoof, VH, et al (2002);** Meeting the needs of young women with secondary amenorrhea and spontaneous premature ovarian failure. *Obstet Gynecol* 99:720-7
- **Anasti, JN, Kalantaridou, SN, Kimzey, LM, et al (1998):** Bone loss in young women with karyotypically normal spontaneous premature ovarian failure. *Obstet Gynecol*; 91:12-20
- **Anne BN and Ana AM (2003):** Diagnostic and operative laparoscopy in: Rock JA and Jones AW (Eds.). *TE linde's operative Gynecology (9<sup>th</sup> Ed) vol.2: 353-78.*
- **Api M, Gorgen H and Cetin A (2005):** Laparoscopic ovarian drilling in polycystic ovarian syndrome. *Eur. of Obstet Gynaecol Reprod Biol.* ; 119(1):76-81.
- **Apter D, Bützow T, Laughlin GA and Yen SS. (1994a):** Accelerated 24 hour luteinizing hormone pulsatile activity in adolescent girls with ovarian hyperandrogenism:

- relevance to the developmental phase of polycystic ovarian syndrome. *J Clin Endocrinol Metab* 79(1):119-125.
- **Apter D, Apter D, Bützow T, Laughlin GA and Yen SS. (1994b):** Increasing the clinical value of serum LH measurements by reducing short-term variation. Presented in 20<sup>th</sup> Spring Meeting of the Finnish Endocrine Society. Tallinn, Estonia.
  - **Arroyo A, Laughlin GA and Morales AJ (1997):** Inappropriate gonadotropins secretion in polycystic ovary syndrome: Influence of adiposity. *J Clin Endocrinol Metab*: 82: 3278-3283.
  - **Atsma, F, Bartelink, ML, Grobbee, DE, et al, (2006):.** Postmenopausal status and early menopause as independent risk factors for cardiovascular disease: a meta-analysis. *Menopause*; 13:265-268
  - **Bachelot, A, Meduri, G, Massin, N, et al. (2005):.** Ovarian steroidogenesis and serum androgen levels in patients with premature ovarian failure. *J Clin Endocrinol Metab*; 90:2391-2400.
  - **Bakalov, VK, Anasti, JN, Calis, KA, et al (2005):** Autoimmune oophoritis as a mechanism of follicular dysfunction in women with 46, XX spontaneous premature ovarian failure. *Fertil Steril* 84:958-980.
  - **Balen AH, Conway GS, Kaltsas G, et al. (1995):** Polycystic ovary syndrome; the spectrum of the disorder in 1741 patients. *Hum Reprod*; 8:2107-11.
  - **Balen J and Jacobs HS, (1994):** A prospective study comparing unilateral and bilateral laparoscopic ovarian diathermy in women with the polycystic ovary syndrome. *Fertility and Sterility*. 5: 921 -5.

- **Balen AH, (1999):** Polycystic ovary syndrome: Medical or surgical treatment. In: Evidence based fertility treatment. Templeton, A., Cooke, I. and O'Brien, P.M.S. editors, RCOG Press, p. 157.
- **Bannatyne P, Russell P and Shearman RP (1990).** Autoimmune oophoritis: a clinical assessment of 12 cases. *Int J Gynecol Pathol* 9,191:207.
- **Barbarino-Monnier P, Gobert B, Guillet-Rosso F, et al, (1995).** Antiovary antibodies, repeated attempts, and outcome of invitro fertilization. *Fertil Steril* 56,928±932.
- **Barbarino-Monnier, P., Gobert, B., Guillet-Rosso, F. et al, (2003).** Antiovary antibodies, repeated attempts, and outcome of in vitro fertilization. *Fertil. Steril.*, 56, 928–932
- **Barbarino-Monnier P, Gobert B, Guillet-May F, et al, (2006).** Ovarian autoimmunity and corticotherapy in an in-vitro fertilization attempt. *Hum Reprod*10, 2006±2007.
- **Bernardi, F, Hartmann, B, Casarosa, E, et al (1998).** High levels of serum allopregnanolone in women with premature ovarian failure. *Gynecol Endocrinol*; 12:339-340.
- **Bohnet HG, Hanker JP and Horowski R (1979).** Suppression of prolactin secretion by Lisuride throughout the menstrual cycle and in hyperprolactinaemic menstrual disorders. *Acta Endocrinol*; 92:8-15
- **Branch DW (2004).** Antiphospholipid antibodies and fetal compromise. *Thromb Res* 114:415–418.
- **Branigan ME and Estes A (1999).** Using oral contraceptives as a treatment for clomid-resistant patients. *Fertil Steril*; 71:544-546.
- **Brodie A and Inkster S (1993).** Aromatase in the human testis. *J Steroid Biochem Mol Biol*; 44:549-555.

- **Brown JB, Pepperrell RJ and Evans JH (1980).** In: The infertile Couple. Eds: RJ Pepperrell, B Hudson and C Wood. Churchill Livingstone. Edinburgh , p7.
- **Bulun SE and Simpson ER (1994).** Regulation of aromatase expression in human tissues. *Breast Cancer Res Treat*; 30:19-29.
- **Campo S, Felli A, Lamanna MA, et al, (1993).** Endocrine changes and clinical outcome after laparoscopic ovarian resection in women with polycystic ovaries. *Human Reproduction*, 8: 359 – 63.
- **Campo S (1998).** Ovulatory cycles, pregnancy outcome and complications after surgical treatment of polycystic ovary syndrome. *Obstetrical and Gynecological Survey*; 53(5):297 – 308.
- **Carmina E, Gonzalez F, Chang L and Lobo RA (1995):** Reassessment of adrenal androgen secretion in women with polycystic ovary syndrome. *Obstet Gynecol* 85: 971-976.
- **Carmina E, Wong L, Chang L, et al, (1997):** Endocrine abnormalities in ovulatory women with polycystic ovaries on ultrasound. *Hum Reprod* 12 (5): 905-909.
- **Carmina E and Lobo RA (1999):** Polycystic ovary syndrome (PCOS): arguably the most common endocrinopathy is associated with significant morbidity in women. *J Clin Endocrinol Metab* 84(6): 1897-1899
- **Carmina E and Lobo RA (2003):** Polycystic ovaries in hirsute women with normal menses. *Am J Med*; 111:602-6.
- **Chang R and Katz SE (1999):** Polycystic ovary syndrome: Diagnosis of Polycystic ovary syndrome. *Endocrinol and Metab* 28(2): 397-408.

- **Check, JH, Nowroozi, K, Chase, JS, et al, (1990):** Ovulation induction and pregnancies in 100 consecutive women with hypergonadotropic amenorrhea. *Fertil Steril*; 53:811-820.
- **Chernyshov VP, Radysh TV, Gura IV, et al, (2001):** Immune disorders in women with premature ovarian failure. *Am J Reprod Immunol* 46, 220-225.
- **Chetkowski, RJ, Meldrum, DR, Steingold, KA, et al,(1986):** Biologic effects of transdermal estradiol. *N Engl J Med*; 314:1615-23.
- **Chou KH, Von Eye Corleta H and Spritzer PM (2003):** Clinical, metabolic and endocrine parameters in response to metformin in obese women with polycystic ovary syndrome: a randomized, double-blind and placebo controlled trial. *Horm Metab Res* 35(2): 86-91 .
- **Clayton RN, Ogden V, Hodgkinson J, et al (1992):** How common are polycystic ovaries in normal women and what is their significance for the fertility of the population? *Clin Endocrinol* 37:127-131.
- **Coffler MS, Patel K, Dahan MH, et al, (2003):** Evidence for abnormal granulosa cell responsiveness to follicle-stimulating hormone in women with polycystic ovary syndrome. *J Clin Endocrinol Metab* 88(4): 1742-1747.
- **Cohen BM (1989):** Laser laparoscopy for polycystic ovaries. *Fertile Steril*, 52:167-8
- **Cramer, DW, Barbieri, RL, Fraer, AR et al (2002):** Determinants of early follicular phase gonadotrophin and estradiol concentrations in women of late reproductive age. *Hum Reprod*; 17:221-229.

- **Dabirashrafi H (1989):** Complications of laparoscopic ovarian cauterization. *Fertility and Sterility*; 52: 878-890.
- **Dalpra C, Chen S, Furmaniak J, et al, (2003):** Autoantibodies to steroidogenic enzymes in patients with premature ovarian failure with and without Addison's disease. *Eur J Endocrinol* 148,565±570.
- **Daniell JF and Miller W,(1989):** Polycystic ovaries treated by laparoscopic laser vaporization. *Fertility and Sterility*; 51: 232-236.
- **Diamanti-kandarakis E, Koulie CR, Bergiele et al (1999):** A survey of the Polycystic ovary syndrome in the Greek Island of Lesbos: a hormonal and metabolic profile. *J Clin Endocrinol Metab*; 84:4006-11.
- **Duff GL and Bernstein C (1933):** Five cases of Addison's disease with socalled atrophy of adrenal cortex. *John Hopkins Med J* 52, 67-83.
- **Duignan NM (1976):** polycystic ovarian disease. *British J Obstet Gynecol* 83: 593-602.
- **Dunaif A and Thomas A (2001):** Current concepts in the polycystic ovary syndrome. *Annu Rev Med*; 52:401-419.
- **Dunaif A (1997):** Insulin resistance and the polycystic ovary syndromes; Mechanisms and implication for pathogenesis. *Endocr Rev* 18:774-800.
- **Ehrmann DA, Barnes RB and Rosenfield RL (1995a):** Polycystic ovary syndrome as a form of functional ovarian hyperandrogenism due to dysregulation of androgen secretion. *Endocrinol Rev* 16: 322-353.
- **Ehrmann DA, Cavaghun MK, Barnes RP, et al, (1999):** Prevalence of impaired glucose tolerance and diabetes mellitus. *Diabetec Care*; 22:141-6.



- **ESHRE Capri Workshop (1996):** Infertility revisited: the state of the art today and tomorrow. *Hum. Reprod.*; 11:1779-1807.
- **Farhi, J, Homburg, R., Ferber, A. et al. (1997):** Non-response to ovarian stimulation in normogonadotrophic, normogonadal women: a clinical sign of impending onset of ovarian failure pre-empting the rise in basal follicle stimulating hormone levels. *Hum. Reprod.*, 12, 241–243.
- **Farquhar CM, Birdsall M, Manning P, et al, (1994) :** The prevalence of polycystic ovaries on ultrasound scanning in a population of randomly selected women. *Aust NZ Obstet gynaecol* 34:67.
- **Fauser BC, Donderwinkel and Schoot DC, (1999):** The step-down principle in gonadotropin treatment and the role of GnRH analogues. *Clin Obstet Gynaecol*; 7:309-30.
- **Felemban A, Tan SL and Tulandi T (2000):** Laparoscopic treatment of polycystic ovary syndrome with insulated needle cautery, a reappraisal. *Fertil Steril*; 73:266-9.
- **Fernandes, AM, Arruda Mde, S, Bedone, AJ (2002):** Twin gestation two years after the diagnosis of premature ovarian failure in a woman on hormone replacement therapy. A case report. *J Reprod Med*; 47:504-10.
- **Fisch B, Fried S, Manor Y, et al (1995):** Increased antiphospholipid antibody activity in in-vitro fertilization patients is not treatment-dependent but rather an inherent characteristic of the infertile state. *Am J Reprod Immunol* 34:370–374.
- **Fluker MR, Wang IY and Rowe TC (1996):** An extended 10-day course of clomiphene citrate (CC) in women with CC-resistant ovulatory disorders. *Fertil Steril*; 66:761-764.

- **Forges T, Monnier-Barbarino P, Faure GC, Béné MC (2004):** Autoimmunity and antigenic targets in ovarian pathology. *Hum Reprod Update* 10:163–175.
- **Fox R (1999):** Transvaginal ultrasound appearances of the ovary in normal women and hirsute women with oligomenorrhea. *AustNZ J Obstet Gynecol* ; 9:63-68.
- **Fulghesu AM, Ciampelli M, Muzj G, et al (2002):** N-acetyl-cysteine treatment improves insulin sensitivity in women with polycystic ovary syndrome. *Fertil Steril* 77:1128-35.
- **Futterweit W, Dunaif A, Yen C and Kingsley P (1988):** The prevalence of hyperandrogenism in 109 consecutive female patients with diffuse alopecia. *J Med Acad Dermatol* 19:831-836.
- **Gemzell CA, Diczfalusy E and Tilliger KG (1960):** Human pituitary follicle stimulating hormone. Clinical effect of a partially purified preparation. *Ciba Foundation Colloquia. Endocrinology.* 13:191-208.
- **Gemzell CA, Diczfalusy E and Tillinger KG (1958):** Clinical effects of human pituitary follicle stimulating hormone (FSH). *J Clin Endocrinol Metab*; 18: 138.
- **Geva E, Amit A, Lerner-Geva L, et al (1997):** Autoimmunity and reproduction. *Fertil Steril* 67:599–611 .
- **Ginsberg J, Hardiman P and Thomas M (1992):** Vaginal bromocriptine, clinical and biochemical effects. *Gynecol Endocrinol* 6:119-22.
- **Gjönnaess H (1994):** Ovarian electrocautery in the treatment of women with polycystic ovary syndrome (PCOS). *Acta Obstetrica et Gynaecologica Scandinavica.* ; 73: 407 – 12.

- **Gobert B, Jolivet-Reynaud C, Dalbon P, et al (1992):** An immunoreactive peptide of the FSH involved in autoimmune infertility after attempts at human in-vitro fertilization. *Biochem Biophys Res Commun* 289, 819-824
- **Gobert B, Barbarino-Monnier P, Guillet-May F, et al, (2000):** Anti ovarian antibodies after attempts at human in vitro fertilization induced by follicular puncture rather than hormonal stimulation. *J. Reprod Fertil.* 96:213–218 .
- **Gobert B, Jolivet-Reynaud C, Dalbon P, et al (2001):** An immunoreactive peptide of the FSH involved in autoimmune infertility. *Biochem Biophys Res Commun* 289, 520:553.
- **Goldzieher JW (1981):** Polycystic ovarian disease. *Fertil Steril* 35: 371-372.
- **Greenblatt E and Casper RF (1993):** Adhesion formation after laparoscopic ovarian cautery for polycystic ovarian syndrome: lack of correlation with pregnancy rate. *Fertility and Sterility* 60: 766 – 770.
- **Hatch, EE, Troisi, R, Wise, LA, et al. (2006):** Age at natural menopause in women exposed to diethylstilbestrol in utero. *Am J Epidemiol* 164:682-690.
- **Higa GM (2000):** Was altering the estrogenic milieu of breast cancer with a focus on the new aromatase inhibitors. *Pharmacotherapy* 20:280-91.
- **Hoegar K (2001):** Obesity and weight loss in polycystic ovary syndrome. *Obstet Gynecol Clin North Am* 28:85-97.
- **Hoek A, van Kasteren Y, de Haan-Meulman et al (1995):** subsets, NK cells, and delayed type hypersensitivity skin test in patients with premature ovarian failure. *Am J Reprod Immunol* 33, 495: 502.

- **Hoek A, Schoemaker J and Drexhage HA (1997):** Premature ovarian failure and ovarian autoimmunity. *Endocr Rev* 18,107:134.
- **Homburg R, Levy T and Berkovitz (1996):** Gonadotropin releasing hormone agonist reduces the miscarriage rate for pregnancies achieved in women with polycystic ovarian syndrome. *Fertil Steril* 59: 527-531
- **Hornstein MD, Davis OK, Massey JB, et al, (2000):** Antiphospholipid antibodies and in vitro fertilization success: a meta-analysis. *Fertil Steril* 73:330–333.
- **Imani B, Eijkemans MJC, Teyelde ER, et al (1999):** Predictors of patients remain anovulatory during clomiphene citrate induction of ovulation in normogonadotropic oligoamenorrheic infertility. *J Clin Endocrinol Metab* 83:2261-5.
- **Irvine WJ, Chan MMW, Scarth L, et al (1968):** Immunological aspects of premature ovarian failure associated with idiopathic Addison's disease. *Lancet* 2:883-887.
- **Jayagopal V, Kilpatrick ES, Jennings PE, et al (2003):** The biological variation of testosterone and sex hormone-binding globulin (SHBG) in polycystic ovarian syndrome: implications for SHBG as a surrogate marker of insulin resistance. *J Clin Endocrinol Metab* 88(4): 1528-1533.
- **Kaaijk EM, Beek JF, Hamerlynck JV et al (1997):** Unilateral oophorectomy in polycystic ovary syndrome: a treatment option in highly selected cases? *Human Reproduction*; 12(11): 2370-2.

- **Kalantaridou, S.N., Davis SR and Nelson LM (1999):** Premature ovarian failure. *Endocrinol Metab Clin North Am* 27,989-1006.
- **Kalantaridou SN, Braddock DT, Patronas NJ and Nelson LM (1999):** Treatment of autoimmune premature ovarian failure. *Hum Reprod*14, 1777-1782.
- **Kalantaridou, SN, Naka, KK, Papanikolaou, E, et al.(2004):** Impaired endothelial function in young women with premature ovarian failure: normalization with hormone therapy. *J Clin Endocrinol Metab*; 89:3907-12
- **Kalantaridou, SN and Nelson, LM. (2002):** Premature ovarian failure is not premature menopause. *Ann N Y Acad Sci*; 900:393-400.
- **Kaunitz, AM (2008):** Clinical practice. Hormonal contraception in women of older reproductive age. *N Engl J Med*; 358:1262-1270.
- **Kazer RR, Rock JA, Faro S, et al, (1995):** Current concepts in polycystic ovary syndrome. *Advances in obstetrics and gynecology*. Mosby Yearbook, Inc. Chicago Illinois 2: 199-218.
- **Kidson W (1998):** Polycystic ovary syndrome; a new direction in treatment. *Med J Aust*; 169:537-40.
- **Kim LH, Taylor AE and Barbieri RL (2000):** Insulin sensitizers and polycystic ovary syndrome; can a diabetes medication treat infertility? *Fertil Steril*; 73:1097-8.
- **Khoury MY, Baracat EC, Pardini DP, et al (1996):** Polycystic ovary syndrome; clinical and laboratory evaluation. *Rev Paul Med* 114:122-5.
- **Koivuneen R, Laatikainen T and Tomas C (1999 ):** Prevalence of polycystic ovary syndrome in healthy women. *Acta Obstet Gynecol Scand* ; 78: 137-41.

- **Kousta E, White DM and Franks S (1997):** Modern use of clomiphene citrate in induction of ovulation. *Hum Reprod Update* ; 3: 359-62.
- **Kovacs G, Buckler H, Gangah M, et al (1991):** Treatment of anovulation due to polycystic ovary syndrome by laparoscopic ovarian cauterization. *Br J Obstet Gynaecol* ; 98: 30-5.
- **Kovacs GT (1993):** Endoscopic surgical approach to the treatment of anovulation due to polycystic ovary syndrome – ovarian drilling. In: Sutton C & Diamond MP (Eds.). *Endoscopic Surgery for Gynaecologists*. London W B Saunders Company Ltd; P. 147–153.
- **Kriplani A, Manchanda R, Agarawal N et al (2001):** Laparoscopic ovarian drilling in clomiphene citrate resistant women with polycystic ovarian syndrome. *Journal Am Assoc Gynecol Laparosc.* 8(4):511-8.
- **Laivuori H, Kaaja R, Koistinen H et al (2000):** Leptin during and after preeclamptic or normal pregnancy: its relation to serum insulin and insulin sensitivity. *Metab: Clin Exp* 49(2): 259-263
- **Legro RS (2001):** Diabetes prevalence and risk factors in polycystic ovary syndrome. *Obstet Gynecol Clin North Am*; 28: 99-109.
- **Li TC, Saravelos H, Chow MS, et al ( 1998 ) :** Factors affecting the outcome of laparoscopic ovarian drilling for polycystic ovarian syndrome in women with ovulatory infertility. *British Journal of Obstetrics & Gynaecology.* 105(3): 338 – 44.
- **Li TC, Saravelos H, Chow MS, et al (1998):** Factors affecting the outcome of laparoscopic ovarian drilling for

- polycystic ovarian syndrome in women with ovulatory infertility. *British Journal of Obstetrics & Gynaecology.* ; 105(3): 338 – 44.
- **Lobo RA and Carmina E (2000):** The importance of psychological stress in the polycystic ovary syndrome. *Ann Intern Med* 20: 132(12): 989-993.
  - **Luborsky J (2002):** Ovarian autoimmune disease and ovarian autoantibodies. *J Women's Health Gend Based Med* 11,585-599.
  - **Luborsky JL, Visintin I, Boyers S, et al (1990):** Ovarian antibodies detected by immobilized antigen immunoassay in patients with premature ovarian failure. *J Clin Endocrinol Metab* 70, 69-75.
  - **Luborsky J, Llanes B, Davies S, et al, (1999a):** Ovarian autoimmunity: greater frequency of autoantibodies in premature menopause and unexplained infertility than in the general population *Clin Immunol* 90,368-374.
  - **Luborsky JL, Shatavi S, Adamczyk P, et al, (1999b):** Polycystic ovary syndrome and ovarian autoimmunity—assessment of ovarian antibodies by EIA. *J Reprod Immunol* 42, 79-84.
  - **Luborsky J, Llanes B, Roussev R et al (2000):** Ovarian antibodies FSH and inhibin B: independent markers associated with unexplained infertility. *Hum Reprod* 15, 1046-1051.
  - **Luborsky JL, Thiruppathi P, Rivnay B, et al (2002):** Evidence for different aetiologies of low estradiol response to FSH: age-related accelerated luteinization of follicles or presence of ovarian antibodies? *Hum Reprod* 17, 2641-2649.