

**Case Report**

**Pregnancy in an Infertile Woman with Polycystic Ovary Syndrome**

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**Abstract**

**Introduction:** The most common cause of anovulatory infertility is polycystic ovary syndrome (PCOS). It is a syndrome of ovarian dysfunction associated with hyperandrogenism and polycystic ovary morphology. Several treatment options are available for women with infertility related to PCOS including weight reduction, clomiphene citrate, gonadotropins, laparoscopic ovarian diathermy, metformin and letrozole.

**Case Presentation:** This is a case report of 32-year-old infertile female who was married for 12 years and tried ovulation induction drugs several times but failed to conceive. She was overweight, hirsute, oligomenorrheic and lastly amenorrheic. Investigations revealed altered ratio of FSH and LH, and polycystic ovaries on ultrasound. Patient was advised to do regular physical exercise and prescribed metformin and combined oral contraceptive pill. After treatment restoration of regular menstruation occurred, weight reduced and patient became pregnant.

**Conclusion:** Before choosing any treatment option for an infertile woman with PCOS proper control of abnormal metabolic conditions are necessary for a successful treatment outcome.

**Key words:** Polycystic ovary syndrome (PCOS), infertility, metformin.

**Introduction**

Polycystic ovary syndrome (PCOS), also called hyperandrogenic anovulation (HA)¹, or Stein-Leventhal syndrome², is a set of symptoms due to a hormone imbalance in women³. Symptoms include: irregular or no menstrual period, heavy periods, excess body and facial hair, acne, pelvic pain, trouble getting pregnant, and patches of thick darker, velvety skin⁴. Associated conditions include: type 2 diabetes, obesity, obstructive sleep apnea, heart disease, mood disorders, and endometrial cancer⁵. PCOS occurs due to a combination of genetic and environmental factors⁶. Risk factors include obesity, not enough physical exercise and a family history of someone with the condition⁷. Diagnosis is based on two of the following three findings: oligo/amenorrhoea, hyperandrogenism (clinical or biochemical), polycystic ovaries on ultrasound (Rotterdam criteria). Other conditions that produce similar symptoms include adrenal hyperplasia, hypothyroidism, Cushing's syndrome and hyperprolactinemia⁸. The condition was first described in 1935 by American gynecologist Irving F. Stein, Sr. and Michael L., Leventhal, from whom name of Stein-Leventhal syndrome is taken². Infertility is "a disease of the reproductive system defined by the failure to achieve a clinical pregnancy after 12 months or more of regular unprotected sexual intercourse"⁹. About 35% of the issues involved with infertility are due to women. A major cause of infertility in women is the inability to ovulate. PCOS accounts for 75% of cases of anovulatory infertility⁹-¹⁰.

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Case Presentation
In January 2014, a 32-year-old Bangladeshi female presented to KYAMCH, Sirajgonj for evaluation of infertility and menstrual irregularity. She was married for 12 years and had a history of abortion 11 years back. She was oligomenorrheic for last 8 years with a period of amenorrhoea for last 6 months. She also complained about excessive facial hair for last 2 years. She took ovulation induction drugs several times with different physicians’ advice but failed to conceive. On examination her height was 155 cm, weight 69 kg, BMI-28.72 kg/m², pulse-72/min and BP-120/70 mm of hg. She was hirsute (Ferriman-Gallway 8) and had no acanthosis nigricans. Other systemic examination revealed no abnormality.

Investigations revealed that her pregnancy test was negative and semen analysis of her husband was normal. Then the following investigations were done: Serum LH- 9.88 IU/L, FSH- 2.51 IU/L, TSH- 0.96 mU/L, prolactin- 5.55 ng/L, oestradiol- 210 pmol/L, testosterone-3.23 nmol/L, cortisol (9 am)- 14.30 ng/dl, 17 OH progesterone-1.30 nmol/L, OGTT- fasting-5.2mmol/L, 2 hours after 75 gm anhydrous glucose- 7.1 mmol/L. CBC, renal function, liver function tests, lipid profile reports were normal. USG of whole abdomen showed: mild fatty liver, adenexae - right ovary measures- 5.75×2.01×3.12 cm in size, about 18.92 cc in volume, left ovary measures - 5.60×1.99×3.13 cm in size, about 18.22 cc in volume, tiny follicles were seen in the periphery of the ovaries, suggestive of polycystic ovary. Secondary amenorrhoea with hirsutism together with the appearance of polycystic ovaries on ultrasound established the diagnosis PCOS.

Patient was prescribed Metformin 1 gram twice daily (starting from 500 mg OD dose and gradually increasing the dose)- continued, COCP (combined oral contraceptive pill)- 3 months. Patient was advised to do regular physical exercise and to have a low glycaemic diet. Patient was on regular follow up. After 4 months regular menstruation was established and 6 kg weight was reduced. After 9 months the patient became pregnant.

Discussion
PCOS is the most common endocrine disorders among women between the ages 18 and 44 years\(^1\). It affects approximately 5% to 10% of this age group\(^2\).
The mechanism of anovulation in PCOS is uncertain, but there is evidence of arrested antral follicle development, which in turn may be caused by abnormal interaction of insulin and luteinizing hormone (LH) on granulosa cells. Endocrine disruption such as changed levels of gonadotropin releasing hormone, gonadotropins (especially an increase in luteinizing hormone), hyperandrogenemia & hyperinsulinemia may also directly decrease fertility. Gonadotropins are released by gonadotroph cells of pituitary gland, these cells appear to harbor insulin receptors, which are affected by elevated insulin levels. A reason that insulin sensitizers work in increasing fertility is that they lower total insulin levels in body as metabolic tissues regain sensitivity to the hormone. This reduces the overstimulation of gonadotroph cells in pituitary. Menstruation can be regulated with COCP to minimize the risk of endometrial hyperplasia. The progestogen component inhibits LH secretion and thus ovarian androgen production & oestrogen component increases SHBG levels thus reduces free androgen concentration. Weight loss, exercise & life style modifications have been proven effective in restoring ovulatory cycle and achieving pregnancy in overweight women with PCOS and should be the 1st line option for these women. Studies also show that overweight women are less likely to respond to pharmacologic ovulation induction method. Reducing insulin resistance by improving insulin sensitivity through medications such as metformin, have been an obvious approach and initial studies seemed to show effectiveness. A review in 2014 concluded that there is no evidence that metformin could cause any increased risk of major birth defects in women affected by PCOS and treated during the 1st trimester.

Conclusion
The optimal treatment for infertile women with PCOS has not yet been defined. But before any intervention is initiated, preconceptional counseling should be provided emphasizing the importance of life style, especially weight reduction and exercise in overweight women. After controlling the metabolic condition of the disease, patient may be free from infertility.

References
2. "USMLE-Rx". MedIQ Learning, LLC. 2014. Stein-Leventhal syndrome, also known as polycystic ovary syndrome (PCOS), is a disorder characterized by hirsutism, obesity, and amenorrhea because of luteinizing hormone-resistant cystic ovaries.


