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In This Issue…

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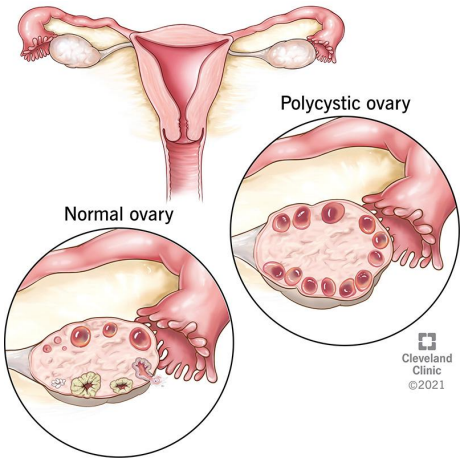
Polycystic Ovarian Syndrome (PCOS)

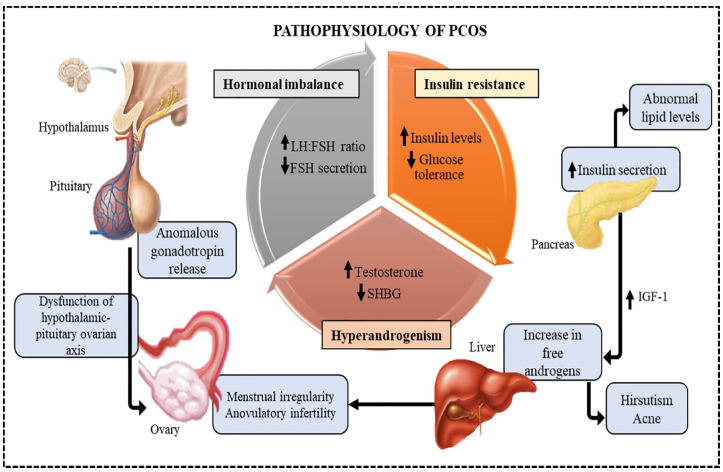
What is polycystic ovarian syndrome?



Polycystic ovary syndrome (PCOS) is a hormonal imbalance that occurs when the ovaries create excess hormones. The ovaries produce unusually high levels of hormones called androgens. This causes the reproductive hormones to become imbalanced. With PCOS, many small sacs of fluid develop along the outer edge of the ovary. These are called cysts. The small fluid-filled cysts contain immature eggs. These are called follicles. The follicles fail to regularly release eggs. As a result, people with PCOS often have irregular menstrual cycles, missed periods and unpredictable ovulation.

PCOS a significant public health problem and is one of the commonest hormonal disturbances affecting women of reproductive age. The condition affects an estimated 6–13% of women of reproductive age, and up to 70% of cases are undiagnosed.

Pathophysiology and risk considerations



Hyperandrogenism

Impaired folliculogenesis is the result of surplus androgens that disrupt normal androgen synthesis. The excess androgens promote the development of primordial follicles and increase in the antral follicles at the early gonadotropin stage.

The secretion of gonadotropin-releasing hormone (GnRH) from the hypothalamus will activate the gonadotropin hormone release from the pituitary. LH hormone promotes androgen production in ovarian theca cells, and FSH hormone acts simultaneously in the ovarian granulosa cells to transform the androgens to estrogens, which promote the follicle growth.

It has been assumed that the dysregulation in the neuroendocrine system results in an imbalance of the hypothalamic-pituitary-ovarian axis leading to a surplus level of gonadotropin. The rise in the GnRH promotes the production of LH over FSH, resulting in a marked hormonal increase in the LH:FSH ratio in PCOS.

Insulin resistance and Type 2 diabetes

Hyperinsulinemia is the root cause of excess androgens as insulin directly simulates the action of LH and raise the GnRH indirectly. Insulin decreases the sex hormone binding globulin (SHBG), a main circulatory protein controlling the testosterone levels. So reduced SHBG would result in a raised level of free androgens. Insulin resistance can cause dyslipidemia and the patients with PCOS are at high risk for cardiovascular disease and diabetes. Several studies revealed that controlling insulin resistance eventually would decrease the excess androgens and improve the condition.

Obesity
Obesity has been correlated with abnormal hypothalamic-pituitary-ovarian axis function leading to PCOS development. Obesity is linked to hyperinsulinemia which further increases the lipid profile, glucose intolerance in PCOS patients. Obesity augments the androgen production by stimulating LH, which in turn leads to hyperandrogenism.
Leptin, an appetite-controlling adipokine has a direct impact on the neuroendocrine and reproductive function of obese PCOS women. Furthermore, hyperleptinemia may hinder ovarian follicular growth. So, decreasing the visceral fat would control the appetite, glucose levels, lipolysis, and increase the SHBG, thereby regulating the androgen action in the ovary.

Low-grade inflammation : It plays a significant role in the development and complications of PCOS by disrupting hormonal balance, contributing to insulin resistance, and affecting reproductive function.

Heredity. Research suggests that certain genes might be linked to PCOS. Having a family history of PCOS may play a role in developing the condition.

The most common signs and symptoms of PCOS include:

- **Infertility:** PCOS is the most common cause of female infertility. Not ovulating regularly or frequently can result in not being able to conceive.
- **Irregular periods:** Abnormal menstruation involves missing periods or heavy bleeding during periods.
- **Abnormal hair growth:** Excess facial hair or heavy hair growth on the arms, chest, and abdomen (hirsutism) is a common symptom, affecting up to 70% of people with PCOS.
- **Thinning hair:** People with PCOS may lose patches of hair on their head or start to bald.
- **Acne:** PCOS can cause acne, especially on the back, chest and face.
- **Obesity:** Between 40% and 80% of people with PCOS have obesity and have trouble maintaining a weight that's healthy for them.
- **Darkening of the skin:** Patches of dark skin, especially in the folds of the neck, armpits, groin (between the legs) and under breasts may appear. This is known as acanthosis nigricans.
- **Cysts:** Many people with PCOS have ovaries that appear larger or with many follicles (egg sac cysts) on ultrasound.
- **Skin tags**: Skin tags are little flaps of extra skin. They're often found in the armpits or on the neck.

It's possible to have PCOS and not have any symptoms. Many people don't even realize they have the condition until they have trouble getting pregnant or are gaining weight for unknown reasons. It's also possible to have mild PCOS, where the symptoms aren't severe enough to notice.

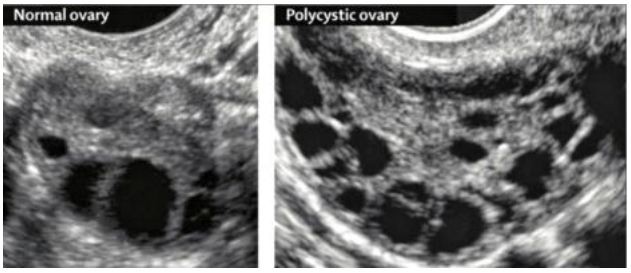
Diagnosis

There's no single test to specifically diagnose PCOS, however, it can be diagnosed by :

- Signs or symptoms of high androgens or irregular or absent menstrual periods – after other causes for this have been excluded.

- Blood tests such as testosterone, oestrogen, luteinising hormone (LH) and anti-müllerian hormone (which measures the fertility level of the ovaries). Other blood testing, such as fasting cholesterol and triglyceride levels and glucose tolerance test.

- An ultrasound can check the appearance of the ovaries and the thickness of the lining of the uterus. The number of follicles per ovary (FNPO) is the most effective ultrasound marker for detecting polycystic ovary morphology (PCOM) in adults. An FNPO of ≥20 in at least 1 ovary should be considered the threshold for diagnosing PCOM in adults.



Complications

- Infertility
- Pregnancy-induced high blood pressure (Gestational diabetes) which may lead to miscarriage.
- Nonalcoholic steatohepatitis : a severe liver inflammation caused by fat buildup in the liver.
- Metabolic syndrome: a cluster of conditions including high blood pressure, high blood sugar, and unhealthy cholesterol or triglyceride levels that significantly increase the risk of cardiovascular diseases.
- Type 2 diabetes or prediabetes
- Sleep apnea : a condition in which breathing stops repeatedly during sleep. This occurs either because of physical obstruction of the airway (obstructive sleep apnea) or because the brain does not regulate breathing normally (central sleep apnea).
- Depression, anxiety and eating disorders
- Cancer of the uterine lining (endometrial cancer)
- Obesity commonly occurs with PCOS and can worsen complications of the disorder.

Therapeutic options for PCOS

To date, there is no pharmacological therapy that can cure the syndrome but some interventive medications are used to treat the clinical symptoms of PCOS. Pharmacological therapies along with a change in the lifestyle ameliorate the overall condition.

Oral contraceptives (OCPs): The OCPs are divided into progesterone-only pills and combined pills containing both estrogen and progesterone (norethisterone, desogestrel). They are first-line therapy for women who do not want to ovulate and are facing menstrual irregularities. OCPs decrease the circulating androgens by raising the SHBG. The use of OCPs diminishes the risk of ovarian cancers.

Antiandrogens: This category includes spironolactone, flutamide, cyproterone acetate which decreases the androgen secretion by androgen receptor inhibition and is preferred as first-line drugs for hirsutism.

Insulin sensitizers: This class includes metformin, thiazolidinediones (TZDs) (rosiglitazone, pioglitazone). This class of drugs is generally used to treat PCOS-associated metabolic co-morbidities by decreasing insulin resistance and normalizing insulin levels. By lowering the IR, the associated androgen level will decrease resulting in improvement in the menstrual cycle.

Ovulation inducing agents: Clomiphene citrate (CC) ,tamoxifen, letrozoleis and gonadotropins such as recombinant FSH are examples of drugs for treating anovulatory sterile women.

Laparoscopic surgery: A surgical procedure can help restore ovulation by removing tissue in ovaries that produces androgen hormones. With newer medications available, surgeons rarely perform this procedure.

In vitro fertilization (IVF): This is an option for people with PCOS when medication doesn't help with ovulation. Provider fertilizes eggs with partner's sperm in a lab before transferring it to the uterus.

Lifestyle Intervention: Studies revealed that changes in the lifestyle, including diet, exercise, and, attitude have a positive impact on body weight, insulin resistance, and testosterone levels.

Conclusion

It is clear that PCOS is a complex condition. The central mechanism is difficult to understand and state. Thereby no treatment can be claimed as a magic bullet as it targets the clinical symptoms rather than curing the syndrome. Further investigation regarding pathophysiology and drugs acting on it should be done for improvising the abiding consequence on patient's health.

References

1. https://www.mayoclinic.org/diseases-conditions/pcos/symptoms-causes/syc-20353439
2. https://my.clevelandclinic.org/health/diseases/8316-polycystic-ovary-syndrome-pcos
3. https://www.sciencedirect.com/science/article/pii/S266639612100008X?via%3Dihub
4. https://www.ncbi.nlm.nih.gov/books/NBK459251/

Walking Pneumonia

What is Walking Pneumonia?

Walking Pneumonia, scientifically referred to as atypical pneumonia, is a milder form of lung infection, often caused by Mycoplasma pneumoniae, that generally does not require hospitalisation.
As this pneumonia usually has a mild course , most affected individuals can still continue their routine without any interruption to daily activities and hence, this condition is commonly referred to as walking pneumonia.
However, it is important to note that the severity of pneumonia can range from mild to life-threatening depending on factors such as age, the type of organism causing the infection, and when the walking pneumonia treatment is started.

Causes of Walking Pneumonia

It is caused by an invasion of bacteria (most commonly), and viruses or fungi (less commonly), that leads to inflammation of the air sacs or alveoli in the lungs.
Walking pneumonia is typically acquired from the community (outside a hospital setting), most often by inhalation of respiratory secretions that contain the causative organism.

Signs and Symptoms

Though walking pneumonia is a mild infection, it does not always mean to be asymptomatic or fully functional. The walking pneumonia symptoms are generally mild and mainly include: fever and chills, shortness of breath, dry cough that worsens at night, sore throat, tiredness and low energy, chest pain, headaches, muscle pain and joint stiffness.

Is walking pneumonia contagious?

The most common type of walking pneumonia caused by Mycoplasma pneumonia is highly contagious and spreads through infected droplets of affected individuals especially when they cough and sneeze. The disease spreads when inhaling these infected droplets.

How is walking pneumonia diagnosed?

It can be diagnosed with certain examinations and laboratory tests such as:

- **Chest X-ray:** Chest X-ray may show patchy infiltrates which is a feature of atypical pneumonia.
- **Blood Tests:** complete blood count, measurement of arterial blood gases: to check oxygen and carbon dioxide levels in blood (Used in cases where ventilatory failure or hypoxia is suspected).
- **Blood cultures:** To check for bacteria in the blood.
- **Bronchoscopy** (Tube with a camera is passed to the lungs): Only used when diagnosis is unclear, atypical presentations, or failure to respond to treatment.
- **Swab of nose or throat**: To identify any bacteria and viruses
- **Sputum Culture:** To identify specific bacteria causing the illness.
- **Urine Test:** To help in the diagnosis of Legionella pneumonia.

Treatment

- **Macrolide antibiotics:** This is generally the first line of treatment to manage walking pneumonia, including azithromycin and clarithromycin.
- If resistance is suspected, **fluoroquinolones** (Eg: levofloxacin, moxifloxacin) and **tetracyclines** (Eg: doxycycline) may be used as alternative treatments.
- The macrolide antibiotics may be combined with broad-spectrum medications including ceftriaxone, cefotaxime depending on the severity of the condition (particularly when both typical and atypical pathogens are suspected). If the condition is severe, the doctor may recommend antibiotics intravenously.
- **Over-the-counter medications:** NSAIDs (such as aspirin, ibuprofen, naproxen) and cough medication may be effective in managing symptoms such as fever and cough. However, in children, aspirin is not recommended.
- It is important to get plenty of rest.
- Drink lots of fluid: this will help to loosen the secretions and bring up the phlegm.

Prevention

- Wash hands regularly with warm water and soap.
- Avoid close contact with individuals who are sick and wear a mask to reduce the risk of infection.
- Exercise regularly and eat timely meals with a well-balanced diet.
- Ensure getting a flu vaccination every year to reduce the chance of infection.
- The doctor may suggest getting vaccinated for pneumococcal pneumonia as it can help protect against Streptococcus pneumoniae.
- Consult the doctor about DTaP/ Tdap Vaccination (Diptheria, tetanus and pertussis vaccine) as it helpful for respiratory health.

References

1. https://pharmeasy.in/blog/vaccine-walking-pneumonia-what-is-it-causes-symptoms-diagnosis-treatment/

Real Enquiries

At the " Drug Information Center" we respond to enquiries from the professional health team as well as from others. Here's one of the enquiries received at the center

Inquiry: What is the dose of Amoxicilline in case of Enterococcal endocarditis?

The answer:

FOR ENTEROCOCCAL ENDOCARDITIS :-

Intravenous bolus injections of **amoxicillin 2g every 4 hours** and gentamicin 80 mg twice daily, both given for **4 weeks.**

Recommended therapy for infective endocarditis (IE) is a combination of high-dose β-lactam (30-40 million units/day penicillin or 200mg/kg/day **amoxicillin**) plus gentamicin for 4-6 weeks. The aminoglycoside component should be administered in two or three equally divided doses.

Sources

1) Sweetman Sean C.2005 Martindate: The Complete Drug Reference, 34the ed. London: Pharmaceutical Press.

2) Guidelines for the antibiotic treatment of endocarditis in adults accessed at jac.oxford journals . org/content/45/6/971.full

3) http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1861255/

Test Your Knowledge

1-The main function of the gallbladder is to

A. secrete bile
B. concentrate bile
C. eliminate bile
D. biosynthesize bile
E. none of the above

2-Crohn's disease is a disease of the

A. brain B. spinal cord
C. stomach D. colon
E. kidney

3-The most prevalent type of white blood cells are the

A. lymphocytes B. eosinophils
C. basophils D. neutrophils
E. monocytes

4-Secretion of adrenal cortical hormones is controlled primarily by

A. somatotropic hermone B. epinephrine
C. glucagon D. ACTH
E. ICSH

Ask the expert

Do herbs have a role in the management of menopausal symptoms?

Plant-based remedies have been used traditionally and are increasingly studied for their potential to help manage the physical and psychological symptoms of menopause. Several herbs have shown promising effects through phytoestrogenic, neurological, and anti-inflammatory mechanisms. As:

Black Cohosh (Cimicifuga racemosa) has been used for many years to treat hot flashes and other menopausal symptoms by selectively suppressing luteinizing hormone (LH) without permanent effects on estrogen receptors.

Sage (Salvia Officinalis), through its binding to GABA receptors and phytoestrogenic effects, participates in the treatment of hot flashes and sweats, and is also effective in improving memory.

Red Clover (Trifolium pratense), rich in isoflavones, has demonstrated efficacy in reducing the frequency and severity of hot flashes and supports the maintenance of bone density.

Answers:

1.(B) 2.(D) 3.(D) 4.(D)