Ad-din Medical Journal
July 2025, 3(2):29-33

Case report

A Case Report on Polycystic Ovary Syndrome (PCOS) in a Bangladeshi Adolescent: Challenges in Diagnosis and Management

Received: 02-04-2025 Accepted: 05-05-2025

Rokya Sharmin Huda Fariha[1]

Abstract

Polycystic ovary syndrome (PCOS) is a common endocrine disorder among adolescent females, yet its diagnosis and management remain challenging, particularly in low-resource settings like Bangladesh. This case report discusses a 16-year-old girl who presented with irregular menstrual cycles, hirsutism, and acne—key clinical features of PCOS. The patient experienced psychological distress due to body image concerns and societal stigma surrounding menstrual irregularities. Initial investigations revealed hyperandrogenemia, polycystic ovarian morphology on ultrasound, and insulin resistance. The patient was managed with a combination of lifestyle modifications, oral contraceptives, and metformin. This case highlights the multifaceted nature of PCOS, the importance of early diagnosis, and the need for a multidisciplinary approach involving gynecologists, endocrinologists, and mental health professionals to optimize patient outcomes. The case further emphasizes the necessity of increasing awareness regarding PCOS among adolescents and healthcare providers to ensure timely intervention and improved quality of life.

Key word: Polycystic ovary syndrome, Adolescence, Hyperandrogenism, Menstrual irregularity, Insulin resistance

Introduction

Polycystic Ovary Syndrome (PCOS) is one of the most common endocrine disorders among adolescent females, affecting approximately 5% to 15% of girls worldwide.[1] The condition is characterized by a combination of hyperandrogenism, ovulatory dysfunction, and polycystic ovarian morphology.[2] While PCOS is well-recognized in adulthood, its diagnosis in adolescents remains a challenge due to overlapping symptoms with normal pubertal changes.[3] These challenges are compounded in low-resource settings like Bangladesh, where limited awareness, social stigma, and inadequate healthcare access often lead to delayed diagnosis and suboptimal management.[4] PCOS presents with a broad spectrum of symptoms, including irregular menstrual cycles, hirsutism (excessive hair growth), acne, and obesity.[5] These manifestations not only pose physical health risks but also have significant psychological effects, including anxiety, depression, and low self-esteem, especially due to societal perceptions of beauty and health.[6] Given its multifactorial nature, the pathophysiology of PCOS involves complex interactions between insulin resistance, hyperandrogenism, and dysregulation of the hypothalamic-pituitary-ovarian axis.[7] Early identification and appropriate management of PCOS are crucial in minimizing long-term complications such as metabolic syndrome, type 2 diabetes, and infertility.[8] However, the diagnosis of PCOS in adolescents requires careful consideration, as irregular menstrual cycles and polycystic ovarian morphology can also be a normal part of puberty.[9] The Rotterdam criteria, commonly used in adults, recommend the presence of at least two of the following three features for diagnosis: oligo/anovulation,

How to cite this article: Fariha RSH. A Case Report on Polycystic Ovary Syndrome (PCOS) in a Bangladeshi Adolescent: Challenges in Diagnosis and Management. Ad-din Med J. 2025 Jul;3(2):43-46

Address of correspondence: Dr. Rokya Sharmin Huda Fariha, Lecturer, Department of Microbiology, Bashundhara Ad-din Medical College, South Keraniganj, Dhaka. Email: rokyasharminhudafariha12345@gmail.com

1. Dr. Rokya Sharmin Huda Fariha, Lecturer, Department of Microbiology, Bashundhara Ad-din Medical College, South Keraniganj, Dhaka.

hyperandrogenism, and polycystic ovaries.[10] For adolescents, however, a more cautious approach, with a focus on persistent symptoms, is recommended.[11] This case report highlights the challenges faced in diagnosing and managing PCOS in an adolescent in Bangladesh, illustrating the importance of a comprehensive, multidisciplinary approach involving gynecologists, endocrinologists, and mental health professionals. It emphasizes the need for early diagnosis and treatment to improve the overall quality of life and prevent long-term health complications.

Case Presentation

A 16-year-old female presented to the Gynecology outpatient department of SSMC with complaints of irregular menstrual cycles since menarche at the age of 13. She reported menstruation every two to three months, with some cycles lasting more than seven days and accompanied by heavy bleeding. Additionally, she complained of excessive hair growth on her face, chest, and lower abdomen, which had progressively worsened over the past two years. The patient also had acne-resistant to conventional treatment and reported recent weight gain despite maintaining a normal diet. The patient had no significant past medical history of diabetes, thyroid disorders, or chronic illnesses. Family history revealed that her mother had experienced similar menstrual irregularities and was later diagnosed with PCOS in her early twenties. The patient was experiencing psychological distress due to body image concerns, leading to social withdrawal and anxiety. Physical examination showed moderate hirsutism (Ferriman-Gallwey score of 12), Acanthosis nigricans on the nape of her neck, and a BMI of 27 kg/m², indicating overweight status. At the time of this case, I was an intern doctor at Sir Salimullah Medical College (SSMC) in the SSMC Outpatient Department receiving and giving treatment the patient, under senior supervision.

Management plan

Lifestyle Modifications

1. The patient was counseled on the importance of weight management and encouraged to adopt a balanced diet with reduced carbohydrate intake and increased fiber and protein consumption.
2. A structured exercise regimen, including 30–45 minutes of moderate physical activity at least five times a week, was recommended.
3. Behavioral therapy and regular follow-ups were planned to ensure adherence to lifestyle changes.

Pharmacological Treatment

1. Oral Contraceptive Pills (OCPs): A low-dose combined oral contraceptive pill containing ethinylestradiol and cyproterone acetate was initiated to regulate menstrual cycles and manage hyperandrogenic symptoms.
2. Metformin: The patient was started on 500 mg of metformin once daily, gradually increasing to 1000 mg per day, to improve insulin sensitivity and reduce the risk of metabolic complications.
3. Anti-Androgen Therapy: Spironolactone (50 mg/day) was considered for additional control of hirsutism and acne after monitoring the initial response to OCPs.
4. Topical and Dermatological Care: The patient was prescribed topical retinoid for acne and advised on proper skincare routines to manage symptoms effectively.

Psychosocial Support

1. The patient was referred for psychological counseling to address body image concerns and anxiety associated with her condition.
2. Support groups for adolescents with PCOS were recommended to enhance emotional well-being and promote treatment adherence.

Final Results

The 16-year-old patient was closely monitored throughout her treatment plan, which involved a combination of lifestyle modifications, pharmacological therapy, and psychosocial support. Following the implementation of the recommended lifestyle changes, including weight management through diet and exercise, the patient showed gradual improvement in her symptoms. The adoption of a balanced diet and regular physical activity led to a reduction in weight, which contributed to better insulin sensitivity. The pharmacological treatment, including oral contraceptive pills (OCPs), was effective in regulating the patient's menstrual cycle, reducing hirsutism, and improving acne. After several months of treatment, the patient experienced a regularization of her menstrual cycles, with a significant reduction in excessive hair growth and acne. The use of metformin helped to improve insulin sensitivity, and the gradual increase in the dose proved beneficial in managing metabolic issues associated with PCOS. Psychosocial support played a critical role in the patient’s overall well-being. Psychological counseling and support groups helped alleviate the anxiety and body image concerns associated with her condition. As a result, the patient showed improved mental health, with a reduction in social withdrawal and enhanced adherence to her treatment plan. After a follow-up period of six months, the patient reported marked improvement in both her physical and psychological health. Her menstrual cycles became more predictable, and the physical symptoms of PCOS, including hirsutism and acne, were significantly lessened. The patient’s weight remained stable, and she expressed greater confidence in managing her condition. Overall, the patient’s case underscores the importance of a comprehensive, multidisciplinary approach to managing PCOS, particularly in adolescents. Early diagnosis, timely intervention, and

ongoing support can lead to significant improvements in both physical health and quality of life, preventing long-term complications such as infertility and metabolic disorders.

Case discussion

Polycystic Ovary Syndrome (PCOS) is a complex, multifactorial disorder with significant reproductive, metabolic, and psychological implications.[12] It is one of the most common causes of menstrual irregularity, hyperandrogenism, and infertility in women, and it can have profound long-term effects if not adequately managed.[13] The condition often presents during adolescence, a time of significant hormonal and physical changes, which makes its diagnosis particularly challenging.[14] Adolescents with PCOS often experience a wide range of symptoms, including irregular periods, excessive hair growth, acne, and weight gain.[15] These symptoms can overlap with the normal physiological changes that occur during puberty, making early detection difficult.[16] As in the case presented, the initial symptoms of irregular menstrual cycles, acne, and hirsutism may go unnoticed or be attributed to adolescence rather than a clinical condition. A key challenge in diagnosing PCOS in adolescents is the overlap of its symptoms with the physiological changes associated with puberty.[17] During adolescence, menstrual irregularity and polycystic ovarian morphology on ultrasound can be considered part of normal development.[18] This makes it difficult to apply the standard Rotterdam criteria, which are commonly used to diagnose PCOS in adults. These criteria include the presence of two out of three features: oligo/anovulation, hyperandrogenism, and polycystic ovaries. However, in adolescents, these criteria require careful interpretation, particularly since both polycystic ovaries and irregular periods may be part of normal puberty.[19] The diagnosis should therefore be considered only when these symptoms persist beyond the typical pubertal period and are accompanied by clinical evidence of hyperandrogenism. In our case, the adolescent patient presented with symptoms of irregular periods, acne-resistant to conventional treatment, hirsutism, and weight gain. These signs, combined with the patient's family history of PCOS, pointed toward a possible diagnosis. Blood tests showing elevated testosterone levels and an increased LH/FSH ratio, along with the characteristic "string of pearls" appearance on ultrasound, confirmed the diagnosis of PCOS. It is important to note that the patient's family history, with a mother diagnosed with PCOS, highlighted the hereditary component of the disorder, which is crucial for identifying risk factors in adolescent patients.[20] The genetic link between PCOS and family history suggests that early diagnosis and intervention can potentially prevent or mitigate the severity of the disorder in the next generation.[21] The management of PCOS in adolescents is multifaceted, addressing hormonal imbalance, metabolic dysfunction, and psychological well-being.[22] As illustrated in this case, lifestyle modifications are the cornerstone of PCOS management.[23] Weight management through a balanced diet and regular physical activity not only helps manage the symptoms but also improves insulin sensitivity, which is often impaired in PCOS patients.[24] Insulin resistance is a central feature of the condition, contributing to both metabolic and reproductive abnormalities.[25] The use of metformin, an insulin-sensitizing agent, in this case was aimed at addressing the metabolic issues associated with PCOS.[26] Metformin has been shown to improve insulin sensitivity, regulate menstrual cycles, and assist in weight management in patients with PCOS, particularly those with obesity or insulin resistance.[27] Pharmacological therapy, including oral contraceptive pills (OCPs) containing ethinylestradiol and cyproterone acetate, was initiated to regulate the patient's menstrual cycles and reduce androgenic symptoms such as hirsutism and acne. OCPs are a first-line treatment for menstrual irregularities and hyperandrogenism in PCOS patients, offering the dual benefit of regulating cycles and suppressing excessive androgen production. However, while effective, the long-term use of OCPs requires regular monitoring due to potential side effects such as thromboembolic events.[28] Anothercritical aspect of PCOS management is addressing the psychological burden associated with the disorder. Adolescents with PCOS often experience emotional distress due to body image concerns, particularly when symptoms such as hirsutism and acne are present.[29] The psychological impact of PCOS can lead to anxiety, depression, and low self-esteem, affecting the overall quality of life.[30] As seen in this case, providing psychological support through counseling and connecting the patient with support groups for adolescents with PCOS were essential components of her treatment plan. This holistic approach, integrating psychological care with medical treatment, significantly contributed to the patient's ability to cope with her diagnosis and adhere to her treatment plan. The patient's case also underscores the importance of a multidisciplinary approach in the management of PCOS. Collaboration between gynecologists, endocrinologists, and mental health professionals ensures that all aspects of the disorder are addressed. This approach can optimize patient outcomes by providing comprehensive care that goes beyond just addressing the physical symptoms of PCOS. Early diagnosis, coupled with a personalized treatment plan, is a key to managing PCOS effectively and preventing complications such as infertility, metabolic syndrome, type 2 Diabetes, and cardiovascular disease. Despite the efficacy of current treatment strategies, the challenges in managing PCOS in low-resource settings like Bangladesh remain significant.[31] The lack of awareness, limited healthcare access, and the stigma surrounding conditions like PCOS delay timely diagnosis and intervention.[32] Public health

initiatives to raise awareness about PCOS and provide education to both healthcare providers and the general population are essential to ensure early detection and appropriate care.[33] In particular, programs targeting adolescents and young women, as well as healthcare professionals, are needed to improve knowledge about the symptoms, risk factors, and treatment options for PCOS.[34] This case highlights the complexities involved in diagnosing and managing PCOS in adolescents, especially in resource-limited settings such as Bangladesh. The patient's symptoms of irregular menstruation, acne, and hirsutism are classic indicators of PCOS, but they also overlap with common physiological changes during puberty.[35] This overlap can delay diagnosis, especially in young girls who may have menstrual irregularities as a part of normal puberty.[36] The presence of family history in this patient further supported the diagnosis, as PCOS tends to run in families, indicating a potential genetic predisposition.[37] The investigation results, including elevated testosterone levels and polycystic ovaries on ultrasound, confirmed the diagnosis. The patient's psychosocial distress due to body image concerns also underscores the importance of a holistic approach to treatment, which not only addresses physical symptoms but also provides psychological support. This case also emphasizes the importance of early intervention to prevent long-term complications like insulin resistance, metabolic syndrome, and infertility, which are common in untreated PCOS cases. In a low-resource setting, where access to specialized care may be limited, increasing awareness among healthcare providers is critical to ensuring timely diagnosis and effective management.

Conclusion

This case highlights the complexities of diagnosing and managing PCOS in adolescents, particularly in low-resource settings like Bangladesh. The patient's initial symptoms of irregular menstrual cycles, hirsutism, and acne posed both physical and psychological challenges, requiring a holistic treatment approach. A combination of lifestyle modifications, pharmacological therapy, and psychosocial support proved effective in managing her condition. Over six months of follow-up, the patient experienced significant improvements, including menstrual cycle regularization, reduced hyperandrogenic symptoms, and enhanced mental well-being. The successful management of this case underscores the importance of early diagnosis, patient-centered care, and a multidisciplinary approach involving gynecologists, endocrinologists, dermatologists, and mental health professionals. Furthermore, it highlights the necessity of increasing awareness among adolescents, their families, and healthcare providers to ensure timely intervention. Given the lifelong implications of PCOS, continuous patient education, regular follow-ups, and long-term monitoring are essential to prevent complications such as metabolic syndrome, type 2 Diabetes, and infertility. This case reinforces that with proper awareness, structured intervention, and patient engagement, the burden of PCOS can be significantly reduced, ultimately improving the overall quality of life for affected individuals

Acknowledgment

I would like to express my deepest gratitude to all the members of the Gynecology and Obstetrics Department of Sir Salimullah Medical College (SSMC) and the Microbiology Department of Bashundhara Ad-din Medical College (BAMC) for their invaluable support and guidance throughout this journey. The encouragement, mentorship, and knowledge shared by my esteemed teachers, colleagues, and staff members have played a significant role in my professional growth. The experiences and insights gained from both departments have been instrumental in shaping my clinical and academic skills. I sincerely appreciate the unwavering assistance, patience, and generosity extended to me, and I will always be grateful for the positive impact you have had on my career.

Conflict of interest

The authors declare that no conflict of interest exists.

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