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Polycystic Ovarian Syndrome

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Polycystic Ovary Syndrome (PCOS)

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Introduction

Polycystic ovary syndrome (PCOS) is the most common endocrine disorder in females of reproductive age (McEwen & Hartmann, 2018). It is a complex disease and encompasses many different metabolic, endocrine and reproductive conditions. Though the exact cause of PCOS is not fully understood, recent studies have shown PCOS may be hereditary and up to fifty percent of first degree female relatives can be affected (Balen, 2017). Early detection and diagnosis of PCOS along with weight loss can help reduce ones risk of long term complications such as diabetes and heart disease (Anagnostis, Tarlatzis & Kauffman, 2018).

Topic Selection

I choose this particular topic because I am interested in becoming a nurse practitioner within women's health field. With the increasing prevalence of PCOS, it is imperative that nurse practitioners have an understanding of the disease process and the possible medical complications that may arise while caring for such patients.

Case Study

Jane is 18 years old and recently went to her gynecologist for her annual exam. Upon examination, her internal anatomy reveals nothing abnormal. Jane did however have concerns regarding abnormal or absent menstrual cycles for the last nine months. Her gynecologist prescribes her a cyclical hormone in order to keep her regular. After a few months of taking the pill, Jane notices her cycle is regular. She then visits her primary care physician in regards to uncontrolled acne, hirsutism and steady weight gain over the last six months. The nurse practitioner gets a full history and physical as well as labs. A lipid panel, Hgb A1c, LFT's, TSH and hormone levels were drawn. Jane's labs all came back normal besides her A1c, which was 6.2, and her testosterone level as also high. After seeing the results, the nurse practitioner then orders a pelvic ultrasound of Jane to look at her ovaries. Upon inspection, her left ovary had over twenty-five follicles. Based off Jane's ultrasound, labs and presenting symptoms, she is diagnosed with PCOS. Along with her birth control, Jane is also prescribed metformin to help regulate her blood glucose, spironolactone to control her androgen levels and is educated on the importance of diet and exercise.

Diagnosis of PCOS

To be diagnosed with PCOS, two of the following conditions must be present.
- Oligo-ovulation or anovulation
- Elevated levels of androgens
- Clinical signs of hyperandrogenism
- Polycystic ovaries

There is no set standard for diagnostic criteria making a PCOS diagnosis complicated.

Pelvic ultrasounds are commonly used for diagnosing PCOS. Ovaries containing at least twenty five follicles are considered a polycystic ovary (Balen, 2017). Refer to Figure 1.

A biochemical marker called the anti-mullerian hormone (AMH) may be more precise than ultrasound technologies in detecting PCOS and may help in differentiating PCOS from menstrual irregularity and androgen excess (Balen, 2017).

Diagnosing PCOS can be difficult at times. For instance, polycystic ovaries may be present in patients with Cushing syndrome, acromegaly, obesity, thyroid diseases and ovarian tumors. For this reason, polycystic ovaries do not have to be present in order to make a PCOS diagnosis.
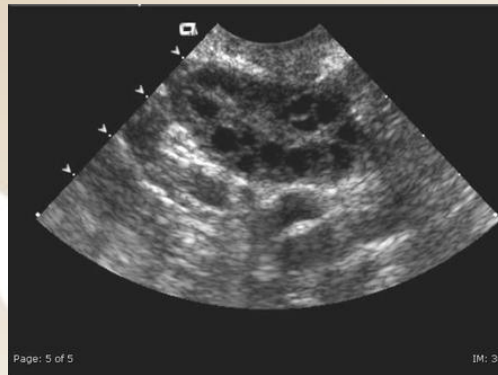

Figure 1. Polycystic ovary on ultrasound.
Retrieved from www.radiopaedia.org

Signs and Symptoms

- Menstrual cycle disturbances
- Acne
- Alopecia
- Fertility problems
- Hirsutism
- Weight gain

Pathophysiology

While the true cause of PCOS is not fully understood, many describe the condition as a metabolic disorder, with primary defects located in the hypothalamic-pituitary axis and overall ovarian function.

The hypothalamus and anterior pituitary axis control maturation of the ovary. They are responsible for releasing follicle-stimulating hormone (FSH) and luteinizing hormone (LH) which initiate ovulation. In PCOS, ovulation is not triggered due to follicles of immature eggs within the ovary that never matured. The lack of ovulation creates low levels of estrogen, progesterone, and LH as well as high levels of androgens (Hanson et al., 2017).

Hyperandrogenism and hyperinsulinemia play a large role in cyst formation. The binding defect of insulin is caused by an increase in serine and a decrease in tyrosine phosphorylation (Suresh & Vijayakumar, 2015). This affects the metabolic pathways within the ovaries causing increased resistance to insulin. This increase in insulin causes the ovary to excessively secret androgen. Hyperandrogenism causes egg follicles to go into an arrested state known as atresia which inhibits egg maturation and the ability to ovulate (Rotstein, 2018).

PCOS is thought to be an autosomal dominate condition. Studies have shown there may be a genetic link between first degree female relatives and up to fifty percent can be affected (Balen, 2017).

Significance of Pathophysiology

Women with PCOS are at an increased risk for obesity, high blood pressure, high blood sugar, and high levels of LDL. These complications, put women at an increased risk for developing diabetes, heart disease and strokes later in life (Rotstein, 2018).

The prevalence of infertility in women with PCOS varies between seventy and eighty percent. Obese women with PCOS may have an increased risk of congenital anomalies such as heart and neural tube defects, gestational diabetes and pre-eclampsia (Melo, Ferriani & Navarro, 2015).

Due to hormonal imbalances, nulliparity, infertility and endometrial hyperplasia, the risk for PCOS women to develop endometrial cancer is very high. A hysterectomy is the suggested safest way to prevent progression of the cancer (Balen, 2017).
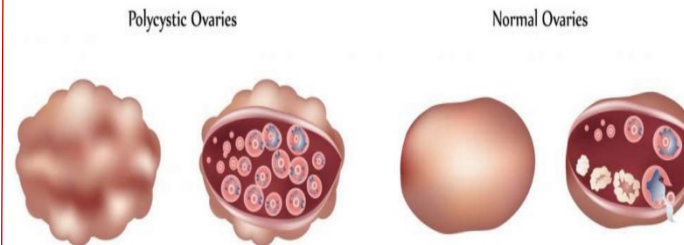

Figure 2. Polycystic ovary vs normal ovary
Retrieved from: www.healthstatus.com

Implications of Nursing Care

With PCOS affecting many different aspects of the body, it is vital that an in depth past medical history be obtained. This insures that proper tests can be ordered as well as ruling out other conditions that can cause polycystic ovaries (Anagnostis, Tarlatzis & Kauffman, 2018).

For many patients with PCOS, goals of treatment include symptom management. For example, patients experiencing irregular menses, and who are not insulin resistant may be prescribed oral contraceptives. Oral contraceptives help to increase sex hormone binding globulin levels and decrease androgen secretion (Otto-Buczkowska, Grzyb & Jainta, 2018).

Diet and exercise should be encouraged. Studies have found that a decrease in abdominal fat may help restore menses as well as decrease insulin resistance in some patients. Metformin may be prescribed to help maintain blood glucose and help to restore the bodies proper response to insulin.

Patients should be regularly screened for depression and anxiety. Low self esteem is commonly seen among PCOS patients due to physical aspects of the disease such a weight gain, facial acne and hirsutism secretion (Otto-Buczkowska, Grzyb & Jainta, 2018).

Treatment

With PCOS being a complex syndrome, multiple different avenues are used for medical treatment.

- Metformin (Insulin uptake)
- Hormonal contraceptives (Management of menstrual cycle)
- Letrozole (Inhibits maturation of androgens)
- Spironolactone in accordance with oral contraceptives (lessens adrenergic affects on the body and hirsutism)
- Diet and exercise

(Balen, 2017)

Conclusion

With PCOS quickly becoming the most prevalent endocrine disorder affecting women during their reproductive period. It is of great importance that nurse practitioners become familiar with the disorder and the multiple comorbidities that may arise. With so many differing clinical symptoms and no true cause, medical professionals still have much to learn about PCOS. It is important that nurse practitioners continue to further their understanding of PCOS and be their patients advocate when it comes to seeking answers.

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