[Commentary] The Polyfollicular Anovulatory Androgenic Syndrome: A New Label for an Old Syndrome

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Abstract

Polycystic ovary syndrome is a hormonal disorder common among women of reproductive age. The affected women may have infrequent or prolonged menstrual periods or excess male hormone levels with manifestations of hyperandrogenemia. The ovaries may fail to ovulate with many arrested follicles at the primordial stage. There was a time when the medical profession honored its members by naming diseases after them and that was the case with Stein and Leventhal syndrome which was later changed to polycystic ovary syndrome. Since then, our understanding of the syndrome had changed dramatically. It is now not just a mere association of symptoms with some ultrasonographic features, but rather complex hormonal and metabolic abnormalities with a wide spectrum of variable clinical presentations. Hence, there is an obvious need for a new name to reflect these abnormalities. This article explains the existing problem with the current name and suggests a new system to rename the syndrome.

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In the past, diseases and/or syndromes were described according to their clinical manifestations, or they may be named after the physician(s) who first discovered them. Later on, the strategy to name a disease/syndrome has been changed to an informative and more accurate one. This strategy is based on a description of the underlying pathological background

of the illness. A clear example in Gynecology is the "Stein-Leventhal syndrome". The name is after the late American gynecologists Irving F. Stein, Sr and Michael Leventhal. The syndrome was later assigned the name "polycystic ovarian syndrome".

There has been a lot of criticism for the name of polycystic ovary syndrome for a variety of reasons. First, there are no cysts inside the ovary as the name indicates. Actually, there are multiple immature antral follicles ranging between 2-9 mm in diameter [1][2]. Furthermore, this finding is not specific to the syndrome as it is present in 20-30% of normally ovulating women [3] and is age-related. Second, the primary signal for the syndrome seems to be insulin resistance and hyperinsulinemia resulting from genetic causes, obesity, inactivity and certain medications [4]. In response to hyperinsulinemia, there will be increased ovarian androgen production with subsequent hyperandrogenemia. This shuts down ovulation and gives the classic features of the syndrome of menstrual disturbances, hirsutism, acne and alopecia [5][6]. The current name "polycystic ovary syndrome" does not reflect this hormonal pathology of the syndrome. Lastly, the current name causes a lot of confusion for patients and their families. They may mistake cysts for tumors on their ovaries [3][7].

In earlier attempts, Lobo [8] proposed changing the name of the disorder to “hyperandrogenic chronic anovulation”. Although reflects the state of hyperandrogenemia associated with the syndrome, it ignores the fact that polycystic ovaries be present in normal ovulatory women. Behera et al suggested changing the name to “estrogenic ovulatory dysfunction” [9]. This name does not reflect the state of hyperandrogenemia which is considered the main metabolic change responsible for the syndrome. Some scientists believe there should be two names for the PCOS phenotypes [10]. Those with primary reproductive consequences should continue to be called PCOS, and those with metabolic consequences should get the name “Metabolic Reproductive Syndrome” and be treated by internists. This would be difficult to apply as gynecologists are the clinicians who see patients with PCOS most frequently.

To name a syndrome, the name must indicate and reflect clearly the pathology behind it and avoid misperception by the patients. It must be easy to recall. I believe the different phenotypes of the syndrome indicate different severities and pathologies and therefore, one name would not be indicative of all phenotypes of the syndrome. A new name(s) may enhance the efforts to expand research for the syndrome. The full-blown picture and the most severe form of the syndrome is the one with the 3 items of Rotterdam's criteria [11] and it would be appropriate to name it as "Polyfollicular Anovulatory Androgenic Syndrome" (PAAS). "Polyfollicular" instead of "polycystic" reflects the real morphologic status of the ovary. The other 3 phenotypes are conveniently named as follows:

1. The anovulatory androgenic syndrome: If only hyper-androgenemia and oligo-anovulation" are present with normal ovarian morphology "not polyfollicular".
2. The polyfollicular androgenic syndrome: If hyper-androgenemia and polycystic ovaries are present. Women in this category are ovulating.

   Women with clinical manifestations of hyper-androgenemia such as acne, hirsutism or androgenic alopecia can be assigned to either "1" if they are anovulatory with normal ovarian morphology or assigned to "2" if they have a polyfollicular ovary on ultrasound examination. Both "1" and "2" can be considered of intermediate severity,

3. The Polyfollicular anovulatory syndrome: If there is polyfollicular ovary and oligo-anovulation. It reflects both the morphology of the ovary and the associated anovulation. Women in this category are normo-androgenic. This normo-androgenic phenotype is considered the least severe[12][13]. No clinical manifestations of hyper-androgenemia in the affected women.

In conclusion, it is the author's view that the polycystic ovary syndrome represents a wide spectrum of interrelated abnormalities with atypical presentations and variable severity. It would be more convenient to divide and name the new divisions into different syndromes for better assessment and management.

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References

1. ^*Khadilkar SS (2016). Polycystic ovarian syndrome: is it time to rename PCOS to HA-PODS? J Obstet Gynaecol India 66:81-87.*
2. ^*Karoshi M, Okolo SO. Commentary: polycystic ovarian disease (PCOD): a misnomer, looking for a new name. Int J Fertil Womens Med. 2004;49:191–192*
3. a, b*Ricardo Azziz (2014). Polycystic Ovary Syndrome: What's in a Name? J Clin Endocrinol Metab 99(4): 1142–1145.*
4. ^*Joselyn Rojas, Mervin Chávez, Luis Olivar, Milagros Rojas, Jessenia Morillo, José Mejías, María Calvo, and Valmore Bermúdez (2014). Polycystic Ovary Syndrome, Insulin Resistance, and Obesity: Navigating the Pathophysiologic Labyrinth. Int J Reprod Med article ID719050. http://dx.doi.org/10.1155/2014/719050*
5. ^*Escobar-Morreale HF, San Millan JL (2007). Abdominal adiposity and the polycystic ovary syndrome. Trends Endocrinol. Metab.18:266-272*
6. ^*Julia Johansson 1 and Elisabet Stener-Victorin Polycystic Ovary Syndrome: Effect and Mechanisms of Acupuncture for Ovulation Induction. Evid Based Complement Alternat Med. 2013; 2013: 762615.*
7. ^*Azziz R, Carmina E, Dewailly D, et a (2009)I. Task Force on the Phenotype of the Polycystic Ovary Syndrome of The*

Androgen Excess and PCOS Society. The Androgen Excess and PCOS Society criteria for the polycystic ovary syndrome: the complete task force report. Fertil Steril 91:456–488

8. ^*Lobo, R.A (1995). A disorder without identity: "HCA," "PCO," "PCOD," "PCOS," "SLS". What are we to call it?! Fertil Steril 63: 1158–1160*
9. ^*Millie Behera, Thomas Price, and David Walmer (2006). Estrogenic ovulatory dysfunction or functional female hyperandrogenism: an argument to discard the term polycystic ovary syndrome. Fertil Steril 8: No. 5:1292-1295*
10. ^*Dunaif, A. and Fauser, B.C.J.M (2013). Renaming PCOS—a two-state solution. J Clin Endocrinol Metab 98: 4325–4328*
11. ^*Rotterdam ESHRE/ASRM-Sponsored PCOS consensus workshop group. Revised 2003 consensus on diagnostic criteria and long-term health risks related to polycystic ovary syndrome (PCOS) (2004). Hum Reprod19:41-47.*
12. ^*Zhang, H.Y., Zhu, F.F., Xiong, J., Shi, X.B., and Fu, S.X. Characteristics of different phenotypes of polycystic ovary syndrome based on the Rotterdam criteria in a large-scale Chinese population. BJOG. 2009; 116: 1633–1639*
13. ^*Dewailly, D., Catteau-Jonard, S., Reyss, A.C., Leroy, M., and Pigny, P. Oligoanovulation with polycystic ovaries but not overt hyperandrogenism. J Clin Endocrinol Metab. 2006; 91: 3922–3927*