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

Mohamed Kandil[1]

1 Suez University

Funding: No specific funding was received for this work.

Potential competing interests: No potential competing interests to declare.

Abstract

Polycystic ovary syndrome is a hormonal disorder common among women of reproductive age. The affected women may have infrequent or prolonged menstrual cycles 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 the polycystic ovary syndrome. Since then, our understanding to the syndrome had changed dramatically. It is now not just a mere association of symptoms with some ultrasonographic features, but rather a 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.

Mohamed Kandil, MD[1,2,3,*]

[1] *Department of Obstetrics and Gynecology, Faculty of Medicine-Menoufia University, Shibin Elkom, Egypt*

[2] *Department of Obstetrics and Gynecology, Armed Forces College of Medicine Cairo, Egypt*

[3] *Department of Obstetrics and Gynecology, Faculty of Medicine-Suez University, Suez, Egypt*

[*] **Contact information**

Email: mohamed.kandeel@med.menofia.edu.eg; kandeelcando@yahoo.com

Mobile: 01005784043

Running Title: A Suggested New Label for the Polycystic Ovary Syndrome

Keywords: Polycystic ovary; anovulation; hyperandrogenemia; hyperinsulinemia.

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 had changed to an informative and more accurate one. This strategy is based upon 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 naming trip has passed through several stages. The syndrome was assigned names such as polycystic ovary disease, sclerocystic ovary disease, HAIR-AN syndrome and lastly 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 is 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 normal ovulating women [3]. 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 and panic for patients and their families. They may mistake cysts for tumors on their ovaries [3][7].

In earleir 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 the polyfollicular morphology may be present in normal ovulatory women in addition to affected 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 treated by internists. This would be difficult to apply as the gynecologists are the clinicians who see patients of PCOS most frequent.

Khadilkar in 2016 proposed a name with two arms, HA-PODS[1]; both of them are essential for diagnosis[7]. HA or hyperandrogenism includes either laboratory evidence of hyperandrogenemia or clinical evidence of hyperandrogenemia, namely hirsutism, or both. Persistent ovulatory dysfunction or POD refers to either or both oligo-ovulation of less than 4 years, and PCO morphology. This ignores the fact that the polyfollicular morphology is present in almost 30% [3] of normal ovulating women. In addition, it is not clear why only oligo-ovulatory women of less than 4 years are considered in the definition.

The challenge in diagnosing and naming the syndrome is that no two cases of PCOS are the same. 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 for all phenotypes of the syndrome. The syndrome deserves to be divided into more than one syndrome in order to enhance the efforts directed to expand research for better assessment and management of 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 Hyperandrogenic Syndrome" or "PAHS". "Polyfollicular" instead of "polycystic" reflects the real morphologic status of the ovary. Anovulation is an associated finding and hyperandrogenemia is the main consistent feature of the syndrome. The syndrome can be abbreviated as "PAHS". For the other 3 phenotypes, the characteristic positive features of each phenotype can be bolded to mark them in the abbreviation. The 3 phenotypes are conveniently named as follows:

1. The anovulatory hyperandrogenic syndrome: If only oligo-anovulation and hyperandrogenemia are present with no polyfollicular ovary morphology. This can be abbreviated as **AH** syndrome.
2. The polyfollicular hyperandrogenic syndrome: If polyfollicular ovaries and hyperandrogenism are present without anovulation, abbreviated as **PH** syndrome.
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. This is abbreviated as **PA** syndrome.

1 and 2 can be considered of intermediate severity, and 3 is the least severe and less common[12][13][14] as it is normo-androgenic phenotype. The term polyfollicular ovaries should be restricted only to the isolated morphological feature of ovaries by ultrasound and should not be considered as a landmark for the diagnosis of this syndrome.

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.

References

1. [a, b]*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, c]*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. [a, b]*Azziz R, Carmina E, Dewailly D, et a (2009) l. 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. ^*Behera M, Price T, Walmer D. Estrogenic ovulatory dysfunction or functional female hyperandrogenism: an argument to discard the term polycystic ovary syndrome. Fertil Steril. 2006;86:1292–1295. doi: 10.1016/j.fertnstert.2006.06.048.*
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*
14. ^*Guastella, E., Longo, R.A., and Carmina, E. Clinical and endocrine characteristics of the main polycystic ovary syndrome phenotypes. Fertil Steril. 2010; 94: 2197–220*