Diagnostic Issues of Polycystic Ovary Syndrome in Manaus, Brazil

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Abstract: Polycystic ovary syndrome (PCOS) is prevalent in 6% to 20% in women of reproductive age and is considered the most common pathological endocrine disorder in this population. Its etiology is complex, and it is characterized by a wide spectrum of signs and symptoms arising from the excess of androgens. The diagnosis of PCOS is mainly made by observing the clinical phenotype of the patient, along with the request for laboratory exams. In this study, we analyzed medical records of patients who sought the Gynecology and Obstetrics ward of a university hospital in the city of Manaus, Brazil. Among 523 verified records, 40 PCOS diagnoses were found and related to the period from 1991 to 2018. We also verified the conditions of storage of medical records of patients, since, up until 2018, this reference center did not have digital data storage mechanisms. It was observed in some cases that important clinical data were not requested by the physician or, when requested, were not presented by the patient at the return visit. In other cases, some data were shown to be missing or crossed out. There was also a lack of appropriate data sheets for the collection of clinical data. The medical record is an important document and ensures the quality of continuous patient care and is also useful for data collection and analysis for teaching and research, among other uses. Due to the conditions of storage and recording of the patient's clinical history, it is possible that significant medical information may have been completely lost.

Key words: PCOS, medical records, diagnostic.

1. Definition, Epidemiology and Diagnosis

Stein and Leventhal (1935) [1] reported a series of seven women who had common oligomenorrhea/amenorrhea and ovaries with polycystic appearance. Of these, five were infertile, three were obese, and three presented hirsutism. Years later, this combination of factors became known as polycystic ovary syndrome (PCOS). This syndrome represents the most common pathological endocrine disorder in women of reproductive age and anovulation is also considered the main cause of infertility [2]. The clinical picture of PCOS is heterogeneous, and is characterized by a wide spectrum of signs and symptoms resulting from elevated serum androgen levels, irregularities in the duration and amount of annual menstrual cycles [3].

The prevalence of PCOS in women during the reproductive phase (menacme) varies from 6% to 20%, but these data are dependent on ethnic and geographical factors of the studied population, as well as the diagnostic criterion that has been used to select this population [4]. Since there is still no definitive consensus on the diagnostic parameters of PCOS, three important classes of criteria have been employed: (1) The criterion in the National Institute of Health (NIH, 1990), which defines both the manifestation of hyperandrogenism (HA) and oligomenorrhea as mandatory in the patient [5]; (2) The criterion of the Society of Androgenic Excesses and the Society of Polycystic Ovary Syndrome (AE-PCOS) of 2009, which defines PCOS only by the presence of HA and oligomenorrhea, without the obligatory presence of polycystic ovaries [6]; and (3) the Rotterdam Criterion developed in 2003 (and revised in 2012) by the American Society of Reproductive Medicine (ASRM) and the European Society for Human Reproduction and Embryology (ESHRE) in the city of Rotterdam in the Netherlands, in which it is established that at least two of the following three signs are present, none of

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them being mandatory: (i) clinical or biochemical HA, (ii) ovulatory dysfunction and (iii) ovaries with polycystic morphology observed by ultrasound [7]. Currently, the Rotterdam criterion is the most widely used by gynecologists and endocrinologists, as well as by related specialties [8].

In medical practice, the diagnosis of PCOS is mostly performed by observing the clinical phenotype [9]. Ovarian dysfunction can be measured by analyzing the patient's menstrual history, which can provide information about the existence of oligomenorrhea/amenorrhea, defined by the shortest duration of each menstrual cycle and by the number equal to or less than eight annual cycles [3]. On the other hand, the verification of signs arising from HA, such as the presence of acne, oily skin, excess hair on the body with male pattern (hirsutism), is partially subjective, that is, it does not have precise quantification, and is often identified as a characteristic that is either present or absent [9].

This study aimed to verify the diagnosis of polycystic ovary syndrome in a Gynecology and Obstetrics ward of a reference hospital in the city of Manaus, Amazonas, as well as observe the collection and organization of patients' clinical data.

2. Results

A total of 523 medical records of patients who had attended the Gynecology and Obstetrics ward of a University Hospital of reference in the city of Manaus, Amazonas state, between the years 1991 and 2018 were analyzed. Of this total, 40 (~7%) were cases of patients diagnosed with polycystic ovary syndrome. The mean age at diagnosis of these women was 25.77 years. The age group with the highest number of cases was between 20-29 years. The oldest and most recent diagnoses occurred in 1991 and 2017, respectively (Fig. 1).
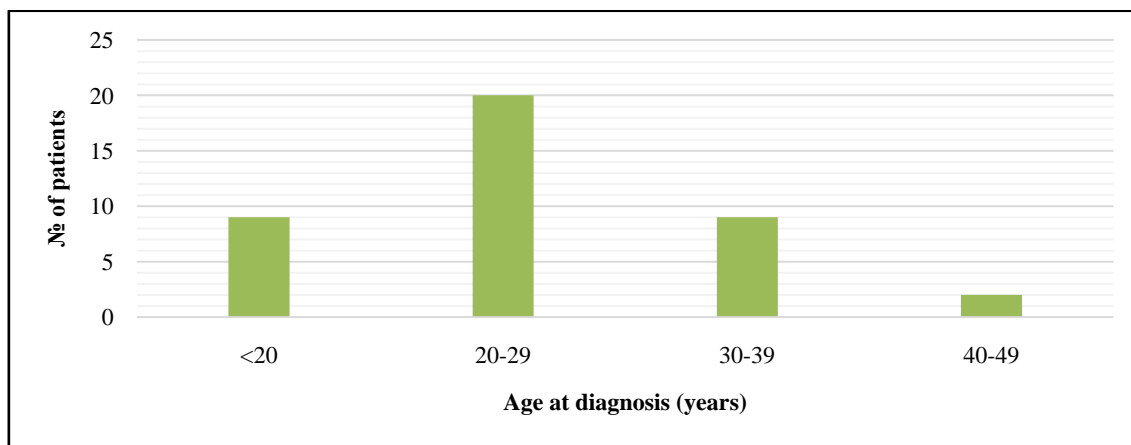

Fig. 1   Frequency of PCOS per group of age.

3. Discussion

Since the first description of women with "polycystic ovaries" by Stein and Leventhal [1], many studies have been developed with the aim of improving knowledge regarding the pathogenesis of this syndrome. However, the etiology of polycystic ovary syndrome still remains unknown, since several factors are involved in its genesis, among which are genetic and epigenetic components, environmental influence or even a combination of these.

PCOS is the main hyperandrogenic endocrinopathy in women during their menacme. Its pathophysiology is complex, and it is endowed with several molecular routes with multiple hormonal components, inflammatory and homeostatic alterations that are characterized mainly by insulin resistance and hyperandrogenism [10]. Its relationship with lipid and glycidic metabolism disorders has been the target of many studies, and currently PCOS is considered a metabolic disease, with all its implications [4].

The diagnosis of PCOS in Brazil follows the guidelines set forth by the consensus of Rotterdam, according to which it is necessary that at least two of the following criteria are met: (1) alteration of the menstrual cycle in the form of oligomenorrhea (the presence of 8 or fewer cycles over the course of a year); and (2) clinical evidence of hyperandrogenism (acne, oily skin, hirsutism) or laboratory evidence (elevated serum levels of androgens, such as total testosterone or androstenedione); and (3) ultrasound detection of an ovary with polycystic morphology, in which the presence of at least 12 antral follicles is verified [11].

In this retrospective study, 40 cases of PCOS were found among 523 women (~7%) who sought the Gynecology and Obstetrics ward of a university hospital in the city of Manaus, Amazonas, Brazil, between the years 1991 and 2018. Upon checking the medical records, many patients were diagnosed with PCOS according to clinical findings only, i.e. irregularities in menstrual cycles (oligomenorrhea or amenorrhea) and clinical presentation of hyperandrogenism. Manifestations of clinical HA may be present in 80%-85% of patients with PCOS, hirsutism being the most characteristic and the most common for the diagnosis of hyperandrogenism [12]. The presence of hair in unwanted regions in the female body, present in 65% to 75% of women with PCOS, is considered the main reason that leads women to seek medical attention [6, 13, 14]. Usually hirsutism is evaluated by the Ferriman-Gallwey index (FG), which assigns values from 0 to 4, according to the absence, presence or density of hair in nine regions of the woman's body. In general, the higher the FG index, the higher the degree of hirsutism of the patient. However, the numerical value of this index may present variations, which are dependent on the observer's assessment [12, 15]. In the present study, the FG index of the vast majority of patients was not found in the medical records. Since the medical records were only physical in the period prior to 2018, it is possible that data on the FG of patients were lost or that there was no proper form to perform the index calculation. Biochemical tests to confirm HA were requested for a few cases (eight), and of these, only four presented results. It is possible that the patient did not return with the result of the requested examination or that the value was not recorded in her medical record.

Due to its syndromic character and the wide spectrum of signs and symptoms, the clinical picture of PCOS can be mimicked by other pathologies that also cause hyperandrogenism, such as androgen-producing tumors, hyperprolactinemia, thyroid gland disorders or non-classical congenital adrenal hyperplasia (NCCAH). In many cases, the diagnosis of PCOS is completed only after the exclusion of these other causes [9].

Of the total of 40 patients diagnosed with PCOS, eight were asked for free testosterone tests, three were asked for testing of serum levels of 17-hydroxyprogesterone (to confirm or exclude NCCAH or hyperprolactinemia), eight were asked for TSH (thyroid-stimulating hormone) levels to assess thyroid function and three, FSH (follicle stimulating hormone) levels to assess premature ovarian failure. Although they were requested, in many cases the result was not present in the patient's medical record, suggesting that the patient did not return for the follow-up visit to present the biochemical test requested by the doctor. Complementary data, such as the duration of the menstrual cycle of each patient, as well as the number of annual cycles, were not collected. Data on the ethnicity of each patient were also not present in the medical records.

As far as we know, this is the first study to provide information regarding the reality of PCOS diagnosis in the city of Manaus, Brazil. It is also the first study that sought to analyze the collection of clinical data of patients in medical records in this setting. Up until 2018, in this Gynecology and Obstetrics ward of a university reference hospital, the patient's medical history was kept only as a physical record, without the use of storage methods in digital media. The

conditions of patient data records in a non-digital medium may have favored, as observed, the loss or erasure of some one or more pages containing important information about the clinical diagnosis, requests for tests or test results. In some cases, it was observed that important clinical data were recorded on plain paper, due to the lack of an appropriate form for the collection of medical information. The calculation of the FG index, for example, requires a special schematized form, containing the nine regions of the body analyzed for the presence of hirsutism. For some patients diagnosed with PCOS, for example, the total sum of the FG index was simply noted on the back of the medical record, without presenting details about the calculation itself.

The medical record is an important document to ensure the quality of continuous patient care and is also useful for data collection and analysis for teaching and research, among other uses. The Federal Council of Medicine (CFM) published in 2002 the resolution establishing the minimum period of 20 years from the last registration, for the preservation of medical records on paper. However, due to inappropriate storage conditions, partial or total loss of this data may occur.

After 2018, a modernization of the data storage system of this hospital occurred, and all new patients had their clinical data recorded on physical files and also in digital medical records. The digital medical record offers several advantages over the old physical records. They can be accessed remotely, they can be read easily, that is, without the effort of trying to understand illegible letters or wrongly filled boxes, and they are safer, since the information contained is not lost, considering the routine of backups. The medical records analyzed in this study, relating to consultations held between 1991 and 2018 had not been digitized.

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