



ORIGINAL ARTICLE

**POLYCYSTIC OVARIES: FINDINGS OF PELVIC ULTRASONOGRAPHIES IN AN
IMAGE EXAMINATION CLINIC IN NATAL, RIO GRANDE DO NORTE, BRAZIL**
**OVÁRIOS POLICÍSTICOS: ACHADOS DE ULTRASSONOGRAFIAS PÉLVICAS EM UMA CLÍNICA
DE EXAME DE IMAGEM EM NATAL/RN**

**OVARIOS POLIQUISTICOS: HALLADOS DE ULTRASONIDOS PÉLVICOS EN UNA CLÍNICA DE EXAMEN DE IMAGEN
EN NATAL, RIO GRANDE DO NORTE, BRASIL**

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ABSTRACT

Objective: to analyze the frequency of polycystic ovaries syndrome in women who underwent ultrasonography at a clinic in Natal, Rio Grande do Norte, Brazil, within the period from August to December 2009. **Methodology:** this is a quantitative study with a descriptive and epidemiological approach based on frequency. It was developed through the collection of image examinations in a private clinic in Natal, Rio Grande do Norte, Brazil, where 540 sonograms were analyzed. **Results:** a frequency of 13.00% of the imaging studies which showed a suggestive diagnosis of polycystic ovaries was found. The average age of women who underwent the exam ranged from 35 to 46 years. **Conclusion:** it was perceived during the research that the diagnostic hypothesis through the ultrasound finding alone is not enough to diagnose polycystic ovaries syndrome. There is a need to consider the signs and symptoms of hirsutism, acne, or androgenic alopecia, chronic anovulation associated to a menstrual disorder such as oligo/amenorrhea, and infertility. Descriptors: polycystic ovaries; ultrasonography; women.

RESUMO

Objetivo: analisar a frequência da síndrome dos ovários policísticos em mulheres que realizaram a ultrassonografia em uma clínica em Natal/RN no período de agosto a dezembro de 2009. **Metodologia:** trata-se de um estudo quantitativo com abordagem descritiva e epidemiológica de frequência. Foi desenvolvido a partir de coleta de exames de imagem em uma clínica privada em Natal/RN onde foram analisadas 540 ultrassonografias. **Resultados:** encontrou-se uma frequência de 13,00% dos exames de imagem que apresentaram hipótese diagnóstica sugestiva de ovários policísticos. A média de idade das mulheres que realizam o exame foi de 35 a 46 anos. **Conclusão:** percebeu-se na realização da pesquisa que a hipótese diagnóstica do achado da ultrassonografia de maneira isolada não é suficiente para diagnosticar a síndrome dos ovários policísticos. Há necessidade de considerar os sinais e sintomas de hirsutismo, acne ou alopecia androgênica, anovulação crônica associada a distúrbio menstrual como oligo/amenorreia e infertilidade. **Descritores:** ovários policísticos; ultrassonografia; mulheres.

RESUMEN

Objetivo: analizar la frecuencia del síndrome de ovarios poliquísticos en mujeres que se sometieron a la ultrasonido en una clínica en Natal, Rio Grande do Norte, Brasil, en el período de agosto a diciembre de 2009. **Metodología:** esto es un estudio cuantitativo con abordaje descriptiva y epidemiológica de frecuencia. Fue desarrollado a partir de la recogida de exámenes de imagen en una clínica privada en Natal, Rio Grande do Norte, Brasil, donde se analizaron 540 ultrasonidos. **Resultados:** se encontró una frecuencia de 13,00% de los exámenes de imagen que mostraron hipótesis diagnóstica sugestiva de ovarios poliquísticos. La edad promedio de las mujeres que se someten al examen fue de 35 a 46 años. **Conclusión:** se percibió en la investigación que la hipótesis diagnóstica del hallado del ultrasonido de forma aislada no es suficiente para diagnosticar el síndrome de ovarios poliquísticos. Es necesario tener en cuenta los signos y síntomas de hirsutismo, acné o alopecia androgénica, anovulación crónica asociada a desorden menstrual como oligo/amenorreia y infertilidad. **Descriptores:** ovarios poliquísticos; ultrasonido; mujeres.

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INTRODUCTION

Polycystic ovaries syndrome (POS) is one of the most common endocrine disorders, affecting about 10% of the women of reproductive age. This is the most common cause of anovulatory infertility of these women.

This syndrome has an unknown pathophysiology, presenting divergences among diagnostic teams with regard to the development of POS. The clinical status varies, but generally it includes hirsutism, acne, or androgenic alopecia, chronic anovulation associated to a menstrual disorder such as oligo/amenorrhea, and infertility.¹

In POS the hormonal disorder emerges from an increase in the production of androgens, which can have several causes, among them hyperinsulinemia due to resistance to insulin because of a decreased action in the organism's cells.²

There is a consensus that insulin deficiency or excess changes the ovarian function significantly. This deficiency found in insulin-dependent diabetes mellitus is associated to the clinical manifestation of the ovarian hypofunction, primary amenorrhea, late menarche, anovulation, low rates of pregnancy, and early menopause.³

In women with POS severe variables of hyperandrogenism and insulin resistance have been found, regardless of obesity. Clinical manifestations such as hirsutismo, menstrual changes, infertility, and obesity affect the self-esteem, having as a consequence insecurity and leading to important psychic changes, such as anxiety and depression.⁴

POS can be diagnosed, after discarding other diseases that cause irregular menstrual cycles and excessive androgens, through the identification of at least two of the following criteria: oligovulation or anovulation, which manifest themselves, usually, along with oligomenorrhea or amenorrhea, elevated androgen levels in blood, or clinical manifestations of excessive androgens and ovarian cysts detected on ultrasonography.⁵

As the cause of POS is not known, the treatment is a preventive one, directed towards the symptoms, aiming to maintain a normal endometrium, to antagonize the androgens action on the target tissues, to decrease the insulin resistance, and to correct an ovulation. Besides combined oral contraceptives and antiandrogens, the insulin-sensibilizing agents are effective in the prevention of hyperinsulinemia-related diseases.⁶

The knowledge on the frequency of polycystic ovaries observed in image exams of women can contribute to improve the planning and actions for the care of women health in its diverse levels of complexity. Thus, this paper aimed to identify the frequency of POS in women who underwent pelvic ultrasonography, following medical advice, in a private clinic in Natal, Rio Grande do Norte, Brazil, within the period from August to December 2009.

METHODOLOGY

This is a quantitative study with a descriptive and epidemiological approach based on frequency, where the information, through statistical analysis, allow a numerical description and provide the researcher with the possibility of a systematic assessment of this issue, through the comparative analysis of numerical data.

The investigation was developed starting from a search in the records of a private clinic which performs image examinations in Natal, Rio Grande do Norte, Brazil. For data collection the research tool selected was a questionnaire asking about the age group of women who underwent pelvic ultrasonography, the date of examination, the medical specialty which required it, and the ultrasonographic finding.

The number of pelvic ultrasonographic exams carried out from August to December 2009 was investigated, totaling 1,292 exams. 540 of them presented findings suggesting some gynecological pathology.

The inclusion criterion in this research was: pelvic ultrasonographic examination with a finding suggesting gynecological pathology. The exams which did not show information related to findings indicating image diagnosis were not included.

Through the software MS Excel a database was developed from the instrument's variables. The process of validation through double feeding (typing) was carried out using two independent typings in two spreadsheets. The statistical analysis was carried out through the software Statistical Package for the Social Sciences (SPSS), version 17.0. For all analyses the statistical significance was 5%.

The researchers contacted the board of the institution where this study was developed in advance, and they were allowed to carry it out and to access information in the clinic's image files. The project was approved by the Committee of Ethics in Research of Universidade Potiguar, under the Protocol 211/2010, CAAE 0218.0.052.000-10.

RESULTS

The research results showed that from the 1,292 exams carried out within the period from August to December 2009, 540 indicated a diagnostic hypothesis of finding suggesting

gynecological pathology, and thus they met the inclusion criteria of this study.

Of the 540 (100%) exams selected, 328 (60.70%) presented a “no alteration” result and 212 (39.26%) presented diagnostic findings, as Table 1 displays.

Table 1. Frequencies distribution of the diagnostic findings of pelvic ultrasonographies in a private clinic in Natal, Rio Grande do Norte, Brazil

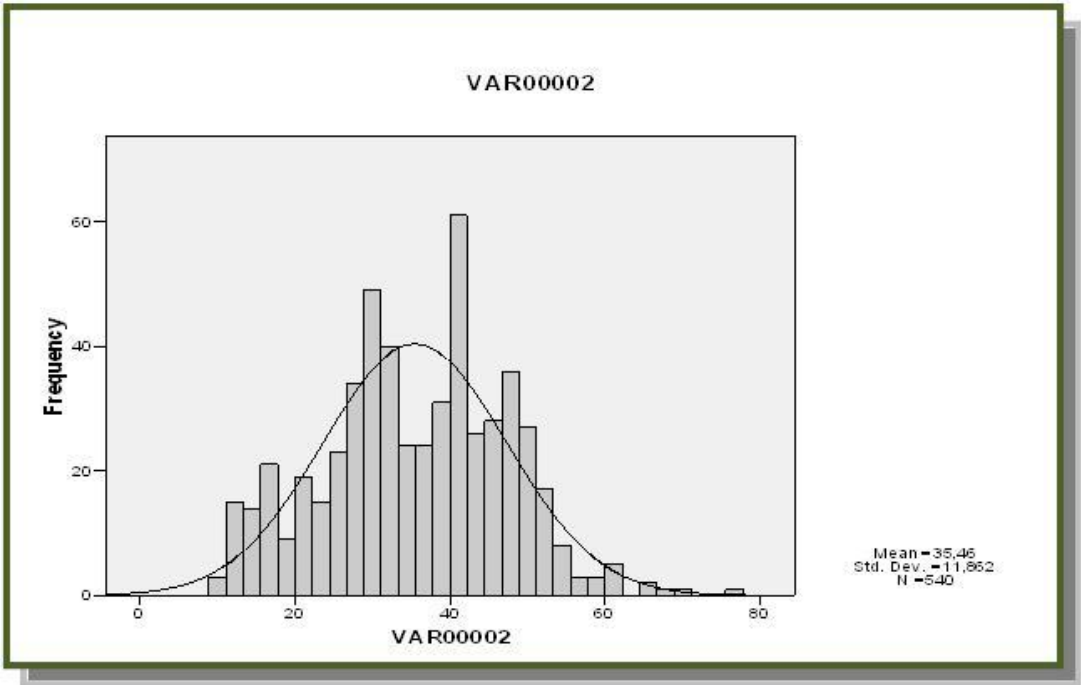
Ultrasonographic findings	N	%
No alteration	328	60,70
Myoma	48	8,90
Atrophic ovaries	1	0,02
Endometriosis	6	1,10
Polycystic ovaries	70	13,00
Intramucous or submucous uterine nodule	10	1,90
Myomatosis	26	4,80
Other findings	51	9,50
Total	540	100.00

Source: Research questionnaire.

According to Table 1, 48 ultrasonographies (8.90%) presented myoma; 1 (0.02%) atrophic ovaries; 6 (1.10%) endometriosis; 70 (13.00%) polycystic ovaries; 10 (1.90%) Intramucous or submucous uterine nodule; 26 (4.80%) myomatosis; 51 (9.50%) other diagnostic findings; and 328 (60.70%) of the image exams obtained as a result “no alteration.”

With regard to the age group of women who underwent pelvic ultrasonography, one observes that the results did not reveal a high

variation because they present near values, as Graphic 1 displays.



Graphic 1. Average and mean deviation of the age of women who underwent ultrasonography in a private clinic in Natal, Rio Grande do Norte, Brazil.

The average age of women who underwent ultrasonography, according to Graphic 1, was 35.46 years and the relative mean deviation was 11.86 years.

Table 2 shows the results of the frequency of the age group of women who presented findings suggesting polycystic ovaries.

Table 2. Distribution of the age group of women who presented findings suggesting polycystic ovaries in pelvic ultrasonography exams in a private clinic in Natal, Rio Grande do Norte, Brazil

Age group	N	%
12 - 17	09	12,86
21 - 29	19	27,14
30 - 39	18	25,71
40 - 47	16	22,86
51 - 56	08	11,43
Total	70	100.00

Source: Research questionnaire.

The age groups affected by polycystic ovaries were those between 21-29 years (27.14%); 30-39 years (25.71%); and 40-47 years (22.86%).

The research revealed that the pelvic ultrasonographies were asked by

gynecologists, general physicians, or physicians with no identification of medical specialty. Table 3 shows the relation of the frequencies of the medical specialty asking the image exam to the findings of polycystic ovaries.

Table 3. Relation of the frequency of medical specialty asking the pelvic ultrasonographic exam to the findings of polycystic ovaries in a private clinic in Natal. Rio Grande do Norte. Brazil

Medical specialty	Total ultrasonographies carried out	Ultrasonographies carried out with a finding of polycystic ovaries
Gynecology	394 (72.96%)	54 (77.14%)
Medical clinic	107 (19.81%)	14 (20.00%)
Non-specified	39 (7.22%)	2 (2.86%)
Total	540 (100%)	70 (100%)

Source: Research questionnaire.

From the 540 (100%) pelvic ultrasonographies carried out, 394 (72.96%) were asked by gynecologists, 107 (19.81%) were asked by general physicians, and 39 (7.22%) have no indication of the medical specialty which demanded them. One observes that 70 (13.00%) of the pelvic ultrasonographies carried out in the clinic presented the diagnostic hypothesis of polycystic ovaries, 54 (77.14%) were asked by gynecologists, 14 (20.00%) were asked by general physicians, and 2 (2.86%) did not specify the medical specialty.

DISCUSSIONS AND IMPLICATIONS

The results of this research showed that from the 540 (100%) pelvic ultrasonographies carried out from August to December 2009, 212 (39.26%) presented findings suggesting gynecological pathologies, such as: myoma, endometriosis, hysterectomy, atrophic ovaries, intramucous or submucous uterine nodule, uterine myomatosis, and polycystic ovaries.

The remaining image exams which provided data for the research, i.e. 328 (60.74%) did not present findings or diagnostic hypotheses previously mentioned.

Historically, the North American POS diagnosis patterns had the combination of excessive androgens and oligo/amenorrhea as the main trademark.⁴ In a contrary sense, the Britain European rules have their diagnosis based mainly on ultrasonographic evidences

from polycystic ovaries.⁷

In 2003, the ultrasonographic evidence from polycystic ovaries was formally incorporated as a diagnostic trace of POS, in a joint meeting between the European Society of Human Reproduction and Embryology (ESHRE) and the American Society for Reproductive Medicine (ASRM).

The inclusion of an ovarian marker was based on substantial proofs that most women with clinical and biochemical features of POS presented polycystic ovaries under ultrasound examination. These authors found in their study on the assessment of the ultrasonographic aspects of polycystic ovaries associated to moderate levels based on the interobserver approach that the identification and quantification of ultrasonographic individual features of polycystic ovaries ranged from weak to moderate.⁸

Thus, if the ultrasonographic evidence of polycystic ovaries can be used as an objective measure for the diagnosis of POS there's a need to decrease the variability of the ultrasound diagnosis.

In order to increase the reliability on the identification of the polycystic ovaries morphology, the first step is to enhance the standardization of the training stages for a uniform interpretation of ultrasonographic images.⁸

In the general women population, about 25% presented polycystic ovaries in the

ultrasound exam, with no other characteristic POS signs. According to the same author, the evidence of polycystic ovaries in the ultrasound is found in up to 14% women using oral contraceptive pill.⁹

The ultrasonographic findings of the ovarian morphology are important for the POS diagnosis, however, they do not reveal the degree of endocrine and dermatologic changes.¹⁰

So, the hypothesis found through ultrasonography is not enough to diagnose POS, since it might be preceded by signs and symptoms such as: hirsutism, acne or androgenic alopecia, chronic anovulation associated to menstruation disorders such as oligo/amenorrhea, and infertility.¹¹

In this study, the age group of women affected by polycystic ovaries was between 12 and 56 years, having a major frequency of the age groups between 21-29 years (27.14%); 30-39 years (25.71%); and 40-47 years (22.86%). This finding corresponds to the reproductive age of women defined by the Brazilian Health Ministry, which ranges from 10 to 49 years.¹²

The polycystic ovary is the most common disorder in the women reproductive age, occurring in 4-7% of women.¹³

The hormonal changes and/or ovarian morphologic changes seem to emerge still in childhood, however, the literature reports with regard to the normal development of ovaries in childhood through the ultrasonography are limited and do not tend to describe details of the morphologic changes during puberty. In their studies, these authors found a prevalence of polycystic ovaries ranging from 6% to 26% from 6 to 15 years of age.¹⁴

POS can be more common in the adolescence than one imagines, due to the increase of hormonal and growing up factors during puberty.¹⁵

Around the world, 105 million women within the age group between 15 and 49 years present POS.¹⁶

It was observed that within the age group between 51 and 56 years (11.43%) the diagnostic hypothesis of polycystic ovaries was found in the pelvic ultrasonographies. Such a frequency shows that POS manifestation can occur during the whole women reproductive cycle, from puberty to menopause, depending on the sociocultural environment, women life conditions, and the estrogen deprivation level.¹⁷

This research showed that the pelvic ultrasonographies carried out in the clinic, the setting of this study, were asked by physicians

from the following medical specialties: gynecology and general clinics.

The higher frequency of diagnostic hypotheses revealed in the ultrasonographies for polycystic ovaries concerned the exams asked by the gynecologist, which represented 54 (77.14%). The general physicians and the non-specified medical specialty had their frequencies of diagnostic hypothesis for polycystic ovaries revealed in the image examinations of 14 (20.00%) and 2 (2.86%), respectively.

Ultrasonography is a formal means of contact between the physician who asks and the one who hears it, its aims is describing the exam findings and report to the physician who asked this exam the assessor's diagnostic hypotheses in order to clarify the patient's problem nature or the evolutive changes of diseases and/or treatment response, increasing the level of information and decreasing the medical team uncertainties.¹⁸

CONCLUSIONS

This research showed a sample of the frequency assessment of polycystic ovaries through the findings of pelvic ultrasonographies in a private clinic in Natal, Rio Grande do Norte, Brazil. This study may be considered a relevant one, since there is a small number of researches stressing the quantitative perspective of the diagnostic hypothesis of polycystic ovaries through image exams.

This research revealed that from the 540 (100%) ultrasonographies on which it was based, 70 (13.00%) presented the diagnostic hypothesis of polycystic ovaries.

According to the literature used in this study, it was observed that the diagnostic hypothesis of polycystic ovary in the ultrasonographic finding is not enough to diagnose POS, since for doing this one should also consider signs and symptoms such as: hirsutism, acne, or androgenic alopecia, chronic anovulation associated to a menstrual disorder as oligo/amenorrhea, and infertility.

Clarifying the diagnostic criteria of POS has significant implications for the identification and early intervention on the syndrome. Early diagnosis and intervention are justified, since there is evidence that women with POS present an increased risk of infertility, dysfunctional uterine bleeding, metabolic syndrome, type II diabetes, and cardiovascular diseases.

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