ORIGINAL ARTICLE

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Ultrasonographic, hysteroscopic and anatomopathological correspondence of postmenopausal patients with abnormal uterine bleeding undergoing hysteroscopy at a teaching hospital

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ABSTRACT

Introduction: Abnormal uterine bleeding (AUB) is a gynecological complaint with a significant impact on women's quality of life. The investigation of AUB is made through anamnesis, beta-hCG tests to exclude pregnancy, transvaginal ultrasound (TVS), and hysteroscopy. The TVS, initial choice in the investigation, is an accessible, low-cost and non-invasive test, well tolerated by patients. Hysteroscopy is the chosen method for direct visualization of the uterine cavity. If any abnormality is found within the cavity, an anatomopathological examination of the endometrium can be performed, which is considered the gold standard for diagnosing endometrial pathologies. **Objective:** Stratify the findings in TVS and hysteroscopy exams of patients with abnormal postmenopausal uterine bleeding that was submitted to hysteroscopy, correlating them with the anatomopathological findings and analyzing their prevalence and incidence. **Method:** Retrospective observational study performed through the analysis of medical records of patients submitted to surgical hysteroscopy at a teaching hospital. **Results:** The data analysis concluded that the most common pathology observed in the studied patients is endometrial polyps, as indicated by findings from TVUS, hysteroscopy, and anatomopathological examination. Furthermore, the study demonstrated a high prevalence of endometrial thickening among women; however, there was no indication of a high prevalence of endometrial cancer, a pathology directly associated with increased endometrial thickness. **Conclusion:** AUB is a frequent condition with a high impact on the patient's quality of life, apart from being related to endometrial cancer. Currently, there is a limited number of studies connecting the proposed themes. Given its significant relevance, further research is needed.

Keywords: Metrorrhagia; Hysteroscopy; Ultrasonography; Biopsy; Postmenopause.

INTRODUCTION

Abnormal uterine bleeding (AUB) is one of the most common gynecological complaints and can affect up to a third of women worldwide, with a major impact on their quality of life[1]. The term is characterized by uterus

bleeding with altered quantity, duration or frequency. AUB can manifest itself acutely, as a single episode that requires immediate intervention, chronically, which is present in cycles in the last six months, and as intermenstrual bleeding, which occurs between the periods of two consecutive cycles[2].

The International Federation of Gynecology and Obstetrics (FIGO) created a classification for the different etiologies of AUB, a tool which helps to guide the clinical evaluation and treatment of the condition. This classification is known by the acronym PALM-COEIN, which PALM indicates structural causes that can be visualized on imaging or evaluated by histopathology, such as uterine polyps (P), adenomyosis (A), leiomyomatosis (L) and malignancy (M). , and COEIN indicates non-structural causes, such as coagulopathies (C), ovarian dysfunction (O), endometrial dysfunction (E), iatrogenic (I) and unclassified cause (N)[3].

The investigation of the patient's AUB complaint begins with the anamnesis, which must be detailed with the characteristics, history, duration, intensity and pattern of the patient's bleeding, in addition to her medical and gynecological-obstetric history. After recording a detailed anamnesis, a general physical, abdominal and pelvic examination should be performed. If the patient is of reproductive age, it is mandatory to request beta-HCG in order to exclude pregnancy [4].

To rule out structural causes of AUB, the first imaging test requested is transvaginal pelvic ultrasound (TVUS), followed by hysteroscopy to directly visualize the uterine cavity. If any macroscopic changes are observed, a biopsy may be chosen to investigate the etiology of the lesion found [4]. Transvaginal ultrasound is the chosen method in the initial investigation of pathologies that cause AUB, as it is a low-cost, easy-to-access, non-invasive exam that is well-tolerated by patients. TVUS is especially relevant in cases of endometrial thickening, since this finding is clinically related to AUB in 90% of postmenopausal women [5]. This exam, however, has low accuracy in differentiating lesions, such as polyps, synechiae, leiomyomas, endometrial thickening and neoplasms, especially because it is an examiner-dependent method [6].

Hysteroscopy is the chosen method for analyzing endometrial lesions, as it allows direct visualization of the uterine cavity. Furthermore, this exam makes it possible to perform targeted biopsies, improving the diagnostic accuracy of intrauterine lesions [7], since the anatomopathological exam is the gold standard exam for diagnosing uterine pathologies, such as endometrial cancer [8].

Menopause corresponds to the last menstrual cycle, which normally occurs between the ages of 45 and 55 and, in most women, is associated with other signs and symptoms, such as genital atrophy, endometrial atrophy, hemorrhages, urinary incontinence, decreased libido, hot flashes, sleep and mood changes. Menopause is diagnosed after one year of amenorrhea without another justifiable cause and translates into definitive ovarian failure [9].

The AUB's investigation is essential, especially in postmenopausal women, as it is the main sign of endometrial cancer, which mostly affects women over 50 years of age, in the postmenopausal period [8,10]. This is one of the most common neoplasms of the female genital system, with an increasing incidence worldwide, mainly due to the increase in the population's life expectancy, associated with other risk factors, such as: hormone replacement with isolated estrogen, diabetes, obesity, nulliparity and late menopause [8].

This research aims to evaluate the correspondence between ultrasonographic and anatomopathological hysteroscopic findings of postmenopausal patients with abnormal uterine bleeding undergoing hysteroscopy at a teaching hospital, as well as its prevalence and incidence.

METHOD

Study design

this is a retrospective observational study, performed through the analysis of medical records of patients treated between 2008 and 2022 in the hospital's outpatient clinic.

Sample

The sample consists of patients using the national public health service, called "*Sistema* Único *de Saúde* (SUS)", who attended the service to undergo a video hysteroscopy exam and convenience sampling of patient data that met the inclusion and exclusion criteria was used. This technique was chosen due to the need for patients to have previously undergone video hysteroscopy. The inclusion criteria adopted by the study were: women over 18 years old, post-menopausal, with AUB. Postmenopausal women were considered as those who experienced spontaneous cessation of bleeding for at least 12 consecutive months, without being attributable to medication use or other comorbidities. The exclusion criteria included women under 18 years old, women who did not meet the postmenopausal criteria based on their last recorded medical records, and women who did not have abnormal uterine bleeding.

Procedures

To perform this research, the researchers used data obtained from video hysteroscopic examinations carried out in postgraduate classes of a minimally invasive surgery course at the hospital, which took place during 5 shifts per month, over ten months, in this outpatient clinic. After sample selection, data were collected from the patients' medical records, including clinical signs and symptoms, ultrasound findings, video-hysteroscopic observations, and anatomopathological changes. Data collection took place from December 2022 to June 2023.

Statistical analysis

descriptive Statistics and Inferential Statistics methodologies were used. Descriptive statistics were used to characterize the sample, in quantitative and qualitative variables. In quantitative variables, simple frequencies and percentages were used. To characterize the qualitative variables, the median and interquartile distance were used, with the aim of measuring the variability of the data set. In Inferential statistics, non-parametric tests were used in order to measure the degree of association between the variables present in the study, with the chi-square tests and Fisher's exact test.

Ethical care

the Research Ethics Committee (CEP), CAAE n º 62284122.0.0000.5134, carried out the study upon approval. The principles of ethics were respected and are in accordance with National Health Council's Resolution 466/12.

RESULTS

Data collection obtained information from the medical records of 1459 patients, with an average age of 52 years. Among these patients, around 750 are in the postmenopausal period, corresponding to approximately 57% of the total sample, as shown in graph 1. Of these 750 patients, only 243 have AUB associated with menopause, which is the sample number to be studied.

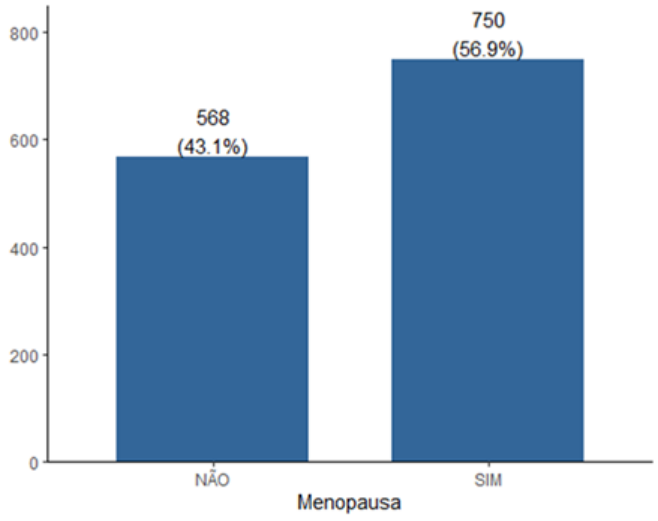

Figure 1–menopause

Analyzing only the group of women selected by these clinical criteria, the group's average age is 60,3 years old. The estimated median age was 60 years, with the first quartile equal to 55 years and the third quartile equal to 66 years old.

Considering only the 243 postmenopausal patients with AUB, data from transvaginal ultrasounds (TVUS) of 193 of these patients were obtained. Table 1 presents the simple frequencies and percentages for the variables analyzed, which have clinical relevance in the study.

Among the postmenopausal patients with AUB, it was observed that almost 82 (44%) had previous uterine surgeries, 37 (20%) had diabetes mellitus (DM), and 126 (67%) had systemic arterial hypertension (SAH). Out of the total, approximately 152 (92%) had an anteverted uterine position, 42 (23%) had a polyp, 31 (17%) had an intramural myoma, and 26 (14%) tested positive for a submucosal myoma.

The table 2 presents the characterization of the sample for hysteroscopy and the main diagnoses found in the exam. 242 of the 243 patients studied underwent the exam, totaling 99.5% of the sample.

Table 1: Postmenopausal patients with AUB who underwent TVUS

Characteristics	N = 193 [1]
Age	59 (55, 65)
Previous uterine surgeries	
NO	103 (56%)
YES	82 (44%)
Pelvic pain	
NO	188 (97%)
YES	5 (2,6%)
Uterine position	
PREVERTED	152 (92%)
RETROVERTED	13 (7,9%)
Polyp	
NO	142 (77%)
YES	42 (23%)
Intramural fibroid	
NO	151 (83%)
YES	31 (17%)
Submucous myoma	
NO	156 (86%)
YES	26 (14%)
Adenomyosis	
NO	181 (99%)
YES	1 (0,5%)
Endometrial thickening	
NO	49 (27%)
YES	135 (73%)
Hypoechogenic mass	
NO	192 (99%)
YES	1 (0,5%)
Intracavity imaging	
NO	191 (99%)
YES	2 (1,0%)
Cyst	
NO	192 (99%)
YES	1 (0,5%)
Ovarian Cyst	
NO	189 (98%)
YES	4 (2,1%)

[1] Median (AIQ); n (%)

Table 2: Postmenopausal patients with AUB undergoing hysteroscopy

Characteristics	N = 242 [1]
Normal	
NO	235 (98%)
YES	6 (2,5%)
Polyp	
NO	36 (15%)
YES	204 (85%)
Intramural fibroid	
NO	236 (98%)
YES	4 (1,7%)
Submucous myoma	
NO	210 (88%)
YES	30 (13%)
Endometrial thickening	
NO	223 (93%)
YES	17 (7,1%)
Signs suggestive of malignancy	
NO	233 (97%)
YES	7 (2,9%)
Synechiae	
NO	236 (98%)
YES	4 (1,7%)
Endometrial atrophy	
NO	233 (97%)
YES	7 (2,9%)
Cervical canal/neck stenosis	
NO	239 (99%)
YES	2 (0,8%)
Increased vascularization	
NO	235 (98%)
YES	6 (2,5%)
vegetative lesion	
NO	238 (99%)
YES	3 (1,2%)

[1] n (%)

Regarding the data obtained after surgical hysteroscopy, it was observed that 204 (85%) patients had a positive result for polyps, 30 (13%) had a positive result for submucosal myoma, 17 (7,1%) for endometrial thickening, 4 (1,7%) for intramural myoma and 7 (2,9%) of the patients showed signs suggestive of malignancy.

The final analysis focused on the anatomopathological test results obtained from surgical hysteroscopy, as presented in Table 3 for sample characterization.

Table 3: Pathology obtained after hysteroscopy of postmenopausal patients with AUB

Characteristics	N = 243 [1]
Adenomyosis	
NO	198 (98%)
YES	5 (2,5%)
Polyp	
NO	44 (22%)
YES	159 (78%)
Myoma	
NO	175 (86%)
YES	28 (14%)
Endometritis	
NO	202 (100%)
YES	1 (0,5%)
Endometrial cancer	
NO	186 (92%)
YES	16 (7,9%)
Endometrial hyperplasia	
NO	185 (91%)
YES	18 (8,9%)
Atrophic endometrium	
NO	202 (100%)
YES	1 (0,5%)

[1] n (%)

As seen in table 3, around 159 (78%) had anatomopathological results showing polyps, while 28 (14%) showed myoma, 5 (2,5%) adenomyosis, 16 (7,9%) endometrial cancer and 18 (8,9%) for endometrial hyperplasia. Only 1 (0,5%) pathology was positive for endometritis.

DISCUSSION

Of the 1459 analyzed patients, menopause was found in 750 (56, 9%) and of these, only 32, 4% had AUB, establishing a sample of 243 patients. Of these patients, 193 presented the TVUS results at the interview and more than 90% of them had an anteverted uterus, while data from the scientific literature indicate that, usually, around 50% of women have an anteversoflexed uterus [11]. Endometrial thickening was the most common pathology on ultrasound, present in 15% of patients.

In postmenopausal women, the endometrial thickness should not exceed 5mm, as values above this threshold are associated with an increased risk of malignancy or other pathologies, such as polyps and fibroids. Therefore, cases of endometrial thickening should be evaluated by more precise tests, such as hysteroscopy[12].

According to the American College of Obstetricians and Gynecologists, TVUS is a good alternative in the initial investigation of endometrial cancer in postmenopausal patients with AUB, having a negative predictive value above 99% [13] for cancer in those patients with thinner endometrial thickness or equal to 4mm[14].

In the present study, of the 178 women who had the endometrial thickness value found in the previously performed TVUS, 158 (88,76%) presented endometrial thickness above 5mm and only 20 (11,24%) below 5mm.

In a prospective comparative study performed in India with 60 patients with AUB, 10 of them were in the postmenopausal period. Of these 10 patients, 50% had an endometrial thickness equal to or less than 3mm on TVUS and only 10% of them had a thickness between 10 and 12mm [15].

In medical practice, transvaginal ultrasound is the first method to be used in the investigation of AUB, due to its functionality and accessibility. However, the amount and intensity of bleeding can interfere with the diagnosis and potentially lead to false negative results in pathology tests. In a study, medical records of pre and post-menopausal patients with AUB were analyzed to compare pathologies diagnosed by TVUS and hysteroscopy, both followed by biopsy. In 89% of the results, the hysteroscopy diagnosis was in agreement with the ultrasound diagnosis, with only 5 cases of polyps being diagnosed at hysteroscopy and not at the TVUS[16, 17].

Polyp was the second most common pathology among TVUS findings, present in 23% of patients. According to the Brazilian Federation of Gynecology and Obstetrics Associations (FEBRASGO), the prevalence of polyps varies from 7-34%–depending on the diagnostic method used and the population studied–and increases progressively with age. Although many women remain asymptomatic, AUB is the main clinical manifestation in endometrial polyps cases[18].

Of the 242 patients who underwent hysteroscopy, 98% of them presented some change in the exam, the main ones being: polyp (85%), submucosal myoma (13%), endometrial thickening (7, 1%), malignancy suggestive signs (2, 9%). Polyp was, notably, the most common pathology in hysteroscopy. In a cross-sectional observational study carried out in Iran with 110 postmenopausal women, with endometrium measuring at least 5mm thick, 67 of them had abnormal uterine bleeding as their main symptom. Of these, 30 presented polyps at hysteroscopy, corresponding to 44, 77% of this selection[12].

Comparatively, the results obtained in the present studies strongly favored the presence of endometrial polyps. It is noteworthy that hysteroscopy results differ from those of TVUS. Hysteroscopy allows for direct visualization of the uterine cavity, ensuring greater precision in the analysis of intracavitary lesions compared to TVUS, which relies significantly on the examiner's training.

In 2014, a meta-analysis was performed involving 17 studies and 9460 women with abnormal uterine bleeding, in pre and post-menopausal period. Hysteroscopy's sensitivity and specificity in diagnosing the four most frequent endometrial pathologies in the explored studies were analyzed: endometrial cancer, endometrial hyperplasia, endometrial polyp and submucosal myoma. The sensitivity found for endometrial cancer, using the ROC curve model, was 82,6% (95% CI 66,9-91,7%) and the specificity was 99,7% (95% CI 98,1-99,9%). Based on these values, it was concluded by the study that hysteroscopy is a good method for diagnosis and is even more effective for excluding endometrial cancer in patients without the pathology [19].

In this meta-analysis, the sensitivity for endometrial hyperplasia was found to be 75.2% (95% CI 55.4-88.1%), while the specificity was 91.5% (95% CI 85.7-95%). In this pathology, it was concluded that there is a heterogeneous pattern in sensitivity, making it not a reliable method for diagnosing endometrial hyperplasia, while the high specificity makes it a good method to exclude the disease. Regarding endometrial polyps, the sensitivity found was 95,4% (95% CI 87,4-98,4%), while the specificity was 96,4% (95% CI 93,7-98,0%). The last pathology analyzed was submucosal myoma: sensitivity 97,0% (95% CI 89,8-99,1%) and specificity 98,9% (95% CI 93,3-99,8%). Both results relating to polyp and those relating to myoma had low heterogeneity, demonstrating a high diagnostic accuracy of hysteroscopy for these pathologies [19].

In 2015, the World Health Organization established criteria that made it necessary, for the diagnosis of endometrial cancer, to perform an endometrial sampling in addition to the imaging exam, such as hysteroscopy. This sampling is then subjected to histopathological analysis [20, 21].

Regarding the study's anatomopathological results, of the 242 women who underwent the procedure, 78% had polyps, 14% myomas, 8,9% endometrial hyperplasia and 7,9% endometrial cancer. Only 1 woman had endometritis.

As in the present study, endometrial polyps were also the most common endometrial lesions in postmenopausal patients with abnormal uterine bleeding found in the Chinese study by Xue, Shen and Zhang, which evaluated 187 postmenopausal women either asymptomatic or with AUB. 84 of them presented AUB and polyps were identified on anatomopathological analysis in 43 of these women (51.2%) [22]. Endometrial cancer and endometrial hyperplasia ranked second and third in the most prevalent pathologies in this study, respectively, with the first affecting 16,7% of the patients and the second 16,6%. Endometritis was the fourth most prevalent, affecting 7, 1% of the patients, being much more prevalent in this Chinese study when compared to the reality of this original Brazilian study [22].

Despite the important correlation between endometrial thickening and endometrial cancer [12], despite the high prevalence of postmenopausal patients with endometrial thickening greater than expected, only 16 women were diagnosed with this neoplasm in the present study.

Limitations of the study

it is necessary to emphasize that the study has limitations that influence in the obtained results. The main limitation that can be observed in the study is related to the sample, since there were incomplete medical records during data collection and, consequently, loss of data relevant to the study, such as symptoms presented by patients and findings from complementary exams to which they were submitted. Another study limitation is the fact that it was carried out through convenience sampling, which allows the analysis of only a portion of the population, making it impossible to make precise conclusions about the general population. Therefore, the study results should be interpreted with caution, and further research with a larger and more diverse sample is necessary to gain a better understanding of the topic at hand.

CONCLUSION

AUB is a common condition with a high impact on women's quality of life. This symptom can be investigated using TVUS, however, the diagnosis of the pathologies causing this bleeding requires accurate and specific tests, such as hysteroscopy followed by anatomopathological examination. The most prevalent pathology observed in all three exams was endometrial polyps. Additionally, abnormal uterine bleeding (AUB) can also be associated with endometrial cancer, which is the main symptom of this condition. In the present study, the prevalence of women with cancer was not as high as that of women with AUB.

In the literature, there are few studies that evaluate the correspondence proposed by the study being discussed. Due to the significance and frequency of this topic, it is crucial to conduct further research involving a substantial number of women, particularly in specialized reference centers like the chosen hospital.

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THE AUTHORS DECLARE THAT THERE IS NO CONFLICT OF INTERESTS IN RELATION TO THIS ARTICLE.