



Original Research Article

Evaluation of palm coein classification and management of abnormal uterine bleeding in latvian population

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ABSTRACT

Objective: About 14-25% of women may experience abnormal uterine bleeding (AUB) during their lifetime. There are a variety of approaches to evaluate the causes of AUB. The basic principle is to use the cheapest and least invasive method, but at the same time an effective method, to emphasize the need to use appropriate diagnostic methods before the intervention. Objectives of our study were to analyze the outcomes of clinical and histopathological diagnosis in women, who had AUB according to Palm-Coein classification.

Materials and Methods: Dates were obtained from Riga East Clinical University Hospital in Gynaecology Clinic. The study included nongravid reproductive age patients with AUB. The clinical diagnose based on transvaginal ultrasound (TVUS) findings. The histopathological diagnosis confirmed by histological examination.

Results: The most common histopathological diagnoses were endometrial polyps 35.0%, endometrial hyperplasia 35.0%, submucosal leiomyomas 23.3%, leiomyomas 18.3%, endometrial adenocarcinomas 5.0%, adenomyosis 3.3% and others 6.7%. The most common TVUS diagnoses were endometrial polyps 26.7%, leiomyomas 23.3%, submucosal leiomyomas 21.6%, endometrial hyperplasia 21.6%, ovarian dysfunction 1.7% and others 16.7%. The study compared the clinical diagnoses with histopathological diagnoses. The results showed that the most coincided diagnoses were endometrial polyp 42.3%, submucosal leiomyoma – 42.1%, leiomyoma 47.1%, endometrial hyperplasia 40.0% and others 20%.

Conclusion: The most common causes of AUB were endometrial polyps, endometrial hyperplasia, leiomyomas and submucosal leiomyomas. Comparing the histopathological diagnosis with a clinical diagnosis, TVUS is not a sufficiently accurate method to diagnose the cause of AUB.

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1. Introduction

AUB is one of the most common gynecological problems. About 14 - 25% of women may experience AUB during their lifetime.¹ In 2011, the Menstrual Disorders Group (FMDG) of the International Federation of Gynecology and Obstetrics (FIGO) developed and published a new classification system, PALM - COEIN, based on the etiology of pathological uterine bleeding.^{2,3} Chronic uterine bleeding is redefined as AUB and menstrual disorders in

terms of volume, frequency, and duration for more than six months. Acute uterine bleeding is defined as extensive uterine bleeding that requires medical intervention to stop the bleeding.⁴

There are a variety of approaches to evaluate the causes of AUB. The basic principle is to use the cheapest and least invasive method, but at the same time an effective method, to emphasize the need to use appropriate diagnostic methods before the intervention. Currently TVUS is the primary imaging diagnostic method for AUB, however, using a sonohysterography (SHG) significantly increases the precision of the diagnosis of AUB. SHG is a more accurate

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procedure than TVUS, the sensitivity and specificity of SHG is 95.1% and 83.3%, but for TVUS it is 79% and 45.8%.⁵ Another procedure is hysteroscopy (HS), it directly visualizes the cavity of the uterus and allows to take tissue samples. Despite its high sensitivity and specificity, 91.9% and 86.5%, HS is not used as the method of first choice, because it is expensive and invasive method.⁶ Nevertheless, TVUS and SHG are very good and precise methods, histopathological examination is only a method to prove the diagnose. Objectives of our study were to analyze the outcomes of clinical and histopathological diagnoses in women, who had AUB according to PALM-COEIN classification.

2. Materials and Methods

Data were obtained from Riga East Clinical University Hospital in Gynaecology Clinic. The study included nonpregnant reproductive age patients with AUB. Data about patient's characteristics, TVUS diagnosis, and histopathological diagnosis were collected by questionnaire and medical records.

Women were randomly selected from the reproductive age. The study included women who complained of menorrhagia, metrorrhagia or polymenorrhagia. The study excluded patients who were in menopause, those before menarche, and those who had bleeding related to a pregnancy complications or patients who received conservative treatment and those with missing data. Finally, the data of 120 patients were analyzed. Before participating in the study, patients signed an agreement on the use and maintenance of their data for the study. Women were categorized by AUB etiology. The basis for the etiology is the AUB FIGO classification, commonly known as the Palm - Coein classification: P - polyp, A - adenomyosis, L - leiomyoma, M - malignancy or hyperplasia, C - coagulopathy, O - ovulatory dysfunction, E - endometrial, I - iatrogenic, N - not yet classified. In the results of our study N - not yet classified was showed as other AUB causes, which include endometritis, placental retention, and other AUB causes. In the study study L - leiomyoma is grouped as leiomyoma submucosal and other leiomyomas types. The clinical diagnose was based on TVUS findings. The histopathological diagnosis confirmed by histological examination. The women's age, body mass index, marital status, occupation, anamnesis of diseases, blood analysis, reproductive history were obtained from questionnaires and medical records.

All statistical analyses were performed using IBM SPSS Statistics 25. Data analyses were performed using multiple response crosstabs and Pearson Chi - Square (X²) test. P-value > 0.05 was not considered significant for these analyses, p value ≤ 0.05 was taken as a critical level of significance. Microsoft excel was used as the basis for figures representation.

3. Results

A total of 120 patients with AUB were included in the study. The sociodemographic characteristics, systematic and basic gynecological background of this population was presented in Tables 1, 2 and 3.

The mean age of the patients was 43.97 (SD ± 6.66). 25.0% (n = 30) of patients presented optimal weight (BMI from 19 up to 25 kg/m²), 5.0% (n = 6) presented underweight (BMI lower than 19 kg/m²), 11.7% (n = 14) had overweight (BMI from 25 up to 30 kg/m²), 58.3% (n = 70) had obese (BMI from 30 upwards kg/m²). Half of the patients 55% (n = 66) had normal haemoglobin levels and the other half 43.3% (n = 52) had a reduced haemoglobin.

Half of the patients 51.7% (n = 62) did not have a systematic disease and up to 85.0% (n = 102) didn't present endocrinal disorders. There were 1.7% (n = 2) of patients who had coagulopathy, 3.3% (n = 4) - chronic liver disease, 8.3% (n = 10) - essential hypertension, up to 21.7% (n = 26) had stress, 1.7% (n = 2) - rapid weight loss and 5.0% (n = 6) - rapid weight gain, 15.0% (n = 18) had physical overload, 1.7% (n = 2) - diabetes, 1.7% (n = 2) - Cushing syndrome, 3.3% (n = 4) - hyperthyroidism, 1.7% (n = 2) - hypothyroidism, 3.3% (n = 4) - hypoparathyroidism, 1.7% (n = 2) - hypophysis adenoma, 1.7% (n = 2) - breast cancer and 16.6% (n = 20) - others.

More than half of patients 56.7% (n = 68) had a normal frequency of menstrual cycle. Almost half 43.3% (n = 52) of women had a normal duration of bleeding and another half 43.3% (n = 52) had a prolonged duration of the menstrual cycle. More than half of 65.0% (n = 78) of patients had irregular menses and 73.3% (n = 88) of patients present heavy in the volume of the menstrual cycle. Most of them didn't present pain.

The histopathological diagnoses of patients were presented in Figure 1. The most common histopathological diagnoses were endometrial polyps 35.0% (n = 42), endometrial hyperplasia 25.0% (n = 30), submucosal leiomyomas 23.3% (n = 28), leiomyomas 18.3% (n = 22), endometrial adenocarcinomas 5.0% (n = 6), adenomyosis 3.3% (n = 4) and other causes were 6.7% (n = 8).

The clinical diagnoses were presented in Figure 2. The most common TVUS diagnoses were endometrial polyps 26.7% (n = 32), leiomyomas 23.3% (n = 28), submucosal leiomyomas 21.6% (n = 26), endometrial hyperplasia 21.6% (n = 26), ovarian dysfunction 1.7% (n = 2) and others 16.7% (n = 20).

Table 4 compares the clinical diagnoses with histopathological diagnoses during our study. The results showed that the most coincided diagnoses were endometrial polyps 42.3% (n = 22), submucosal leiomyomas 42.1% (n = 16), leiomyomas 47.1% (n = 16), endometrial hyperplasia - 40.0% (n = 16) and others 20% (n = 2). Table 4 also shows diagnoses that were not coincide. There were endometrial polyps 57.7% (n = 30), submucosal leiomyomas 57.9% (n = 30), leiomyomas 57.9% (n = 30), endometrial hyperplasia 57.9% (n = 30), adenomyosis 57.9% (n = 30), adenocarcinomas 57.9% (n = 30), hypoparathyroidism 57.9% (n = 30), hypophysis adenoma 57.9% (n = 30), breast cancer 57.9% (n = 30) and others 57.9% (n = 30).

= 22), endometrial hyperplasia 60.0% (n = 24), leiomyomas 52.9% (n = 18), endometrial adenocarcinomas (n = 6), adenomyosis (n = 4) and others 80.0% (n = 8).

Figure 3 shows the procedures and treatments performed for patients. 50.0% (60) of patients had dilation and curettage, 25.0% (n = 30) - hystero-resectoscopy, 6.7% (n = 8) - total hysterectomy and 18.3% (n = 22) subtotal hysterectomy.

Table 1: Characteristics of study subjects

Age (years), mean ± SD	43.97 ± 6.66	
Body mass index	Percentage %	Count (n)
< 19	5.0%	6
19 - 25	25.0%	30
25.1 - 30	11.7%	14
> 30	58.3%	70
Marital status	Percentage %	Count (n)
Married	66.7%	80
Not married	8.3%	10
Single	25.0%	30
Haemoglobin	Percentage %	Count (n)
Normal level 120 - 150 g/l	55.0%	66
A low level	43.3%	52
A high level	1.7%	2

Table 2:

Systematic disease	Percentage %	Count (n)
Not	51.7%	62
Coagulopathy	1.7%	2
Chronic liver disease	3.3%	4
Essential hypertension	8.3%	10
Stress	21.7%	26
Rapid weight loss	1.7%	2
Rapid weight gain	5.0%	6
Physical overload	15.0%	18
Other	16.6%	20
Endocrinal disease	Percentage %	Count (n)
Not	85.0%	102
Diabetes	1.7%	2
Cushing syndrome	1.7%	2
Hyperthyroidism	3.3%	4
Hypothyroidism	1.7%	2
Hypoparathyroidism	3.3%	4
Hypophysis adenoma	1.7%	2
Breast cancer	1.7%	2

Table 3: Characteristics of reproductive system

Menarche (age), mean ± SD	13.62 ± 2.36	
Frequency of menses	Percentage %	Count (n)
Frequent (< 24 days)	33.3%	40
Normal (24 - 38 days)	56.7%	68
Infrequent (> 38 days)	10.0%	12
Duration	Percentage %	Count (n)
Prolonged (> 8 days)	43.3%	52
Normal (4.5 - 8 days)	43.3%	52
Shortened (< 4.5 days)	13.3%	16
Regularity of menses	Percentage %	Count (n)
Regular (variations ± 2-20 days)	35.0%	42
Irregular (variations > 20 days)	65.0%	78
Volume	Percentage %	Count (n)
Normal	10.0%	12
Light	16.7%	20
Heavy	73.3%	88
Painful menstrual cycle	23.3%	28
The length of AUB	Percentage %	Count (n)
No AUB	11.7%	14
< 7 days	11.7%	14
1 - 3 month	18.3%	22
3 - 6 months	15.0%	18
1 year	21.7%	26
2 -5 years	21.7%	26

4. Discussion

During the study, 120 patients were presented with abnormal uterine bleeding where the reason was structural pathology of the uterus. The study found out that most frequent clinical diagnoses were endometrial polyps, leiomyomas, submucosal leiomyomas, endometrial hyperplasia, ovarian dysfunction and others. The most frequent histopathological diagnoses were endometrial polyps, endometrial hyperplasia, submucosal leiomyomas, leiomyomas, endometrial adenocarcinomas, adenomyosis and others. The study showed that the clinical diagnoses do not always coincide with histopathological diagnoses. Therefore, a biopsy should be considered as a necessary diagnostic method to clarify the cause of AUB. According to statistical analysis, endometrial polyps, leiomyoma submucosals, leiomyomas, endometrial hyperplasia and

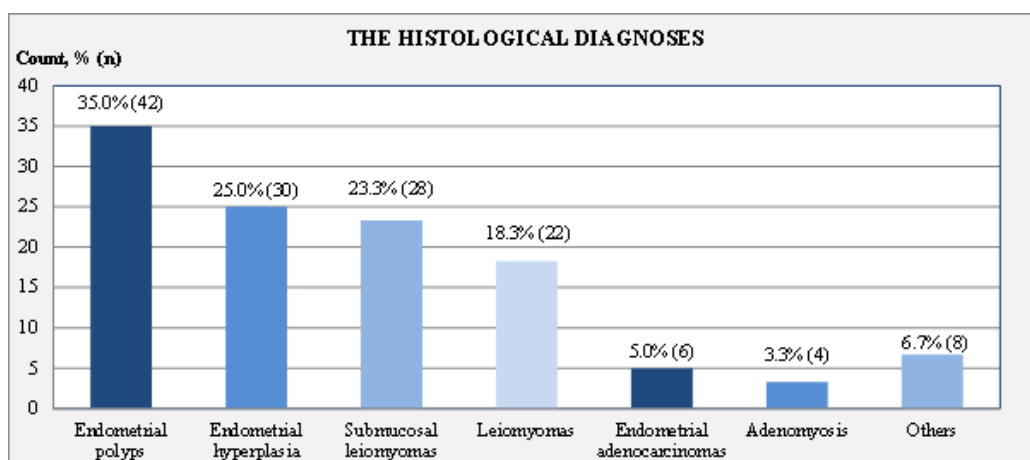


Fig. 1: The histological diagnoses

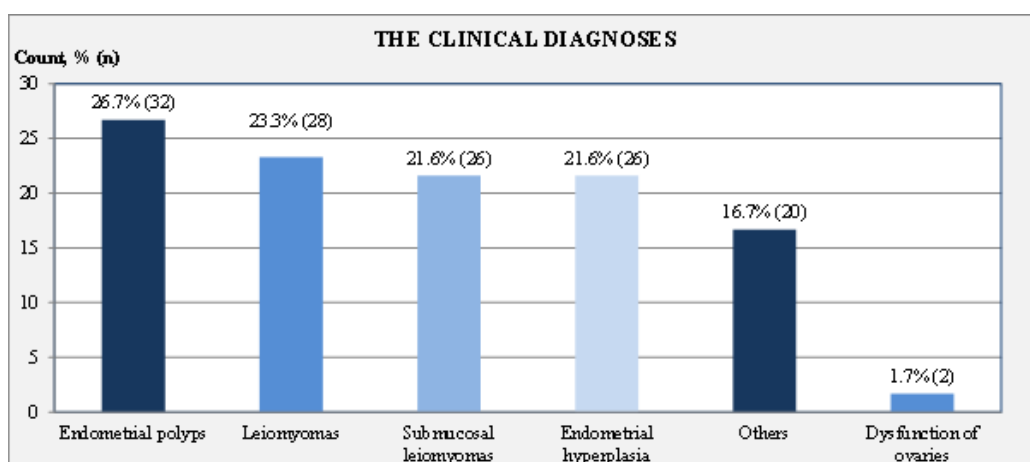


Fig. 2: The clinical diagnoses

Table 4: The coincidence between clinical and histopathological diagnosis

Diagnosis	The diagnosis coincided, % (n)	The diagnosis not coincided, % (n)	P value
Endometrial polyps	42.3% (22)	57.7% (30)	P < 0.05
Leiomyomas submucosal	42.1% (16)	57.9% (22)	P < 0.05
Leiomyomas	47.1% (16)	52.9% (18)	P < 0.05
Endometrial hyperplasia	40.0% (16)	60.0% (24)	P < 0.05
Other	20.0% (2)	80.0% (8)	P < 0.05
Endometrial adenocarcinomas	-	(6)	-
Adenomyosis	-	(4)	-

others were diagnosed repeatedly, with statistically significant differences. The causes will be discussed in more detail further in the discussion below.

Since endometrial polyps and endometrial hyperplasia are closely related to estrogen excess, their pathophysiology can be associated. As well as endometrial hyperplasia can be combined with complicated structures and atypia, therefore the clinicians often have trouble to differentiate endometrial polyps from endometrial hyperplasia. In

addition, endometrial polyps can often be seen with endometrial hyperplasia or it can be within endometrial hyperplasia, but this issue is still unclear.⁷⁻⁹ In the study, the suspicion of polyp by TVUS was in 26.7% of cases, but histologically proven were 35.0%. Endometrial hyperplasia was diagnosed in 21.6% of cases by TVUS, but histologically proven was in 25.0% of cases. It is clearly seen that histology is necessary method to confirm the cause of AUB. TVUS is a non-invasive method that

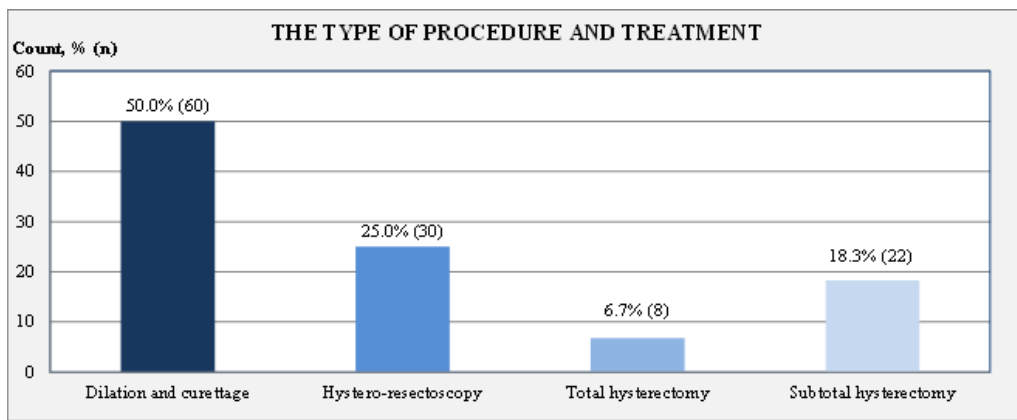


Fig. 3: The type of procedure and treatment

is widely available and relatively inexpensive. It is a safe method because it does not involve radiation. The transducer allows a close and clear view of the uterine cavity and its pathologies. However, the sensitivity and specificity of TVUS are lower than HS in diagnosing endometrial polyp.^{10,11} With HS, we can directly visualize and interpret the cavity of the uterus. These are diagnostic and treatment methods that allows taking sample for histological examination. The SHG is another method that provides better visualization of uterine pathologies compared to TVUS.^{12,13} It is a non-invasive and relatively cheap method comparing to HS. Although TVUS is a widespread and practicable method for identifying uterine pathologies HS and SHG are better for diagnostic and evaluation.

In the study, 23.3% of leiomyomas and submucosal leiomyomas 21.6% were diagnosed by TVUS, but histologically proven were 18.3% of leiomyomas and 23.3% of submucosal leiomyomas. Leiomyomas are growths of muscle and fibrous tissue in the uterine wall and endometrial polyps are overgrowths of the endometrial tissue lining of the uterus. Submucosal leiomyomas typically have an overlying layer of echogenic endometrium, which helps confirm their subendometrial location and helps distinguish them from endometrial polyps. In addition, as opposed to endometrial polyps, submucosal leiomyomas often distort the interface between the endometrium and myometrium and show acoustic attenuation.¹⁴ The definition of leiomyoma, submucosal leiomyoma and endometrial polyp and the performance of diagnostic method may influence the outcomes. The use of different classifications such as simple classification by location: intramural leiomyomas, subserosal leiomyomas, submucosal leiomyomas, and cervical leiomyomas, the European Society of Gynecological Endoscopy (ESGE) classification of leiomyoma or hysteroscopic leiomyoma classification, the “STEPW or Lasmar” classification can effects results and they may be inconsistent. Submucosal

leiomyomas can be difficult to distinguish from endometrial polyps. SHG and HS are methods that allow better visualization of the endometrium and differentiate it from endometrial polyps.^{15,16} The difference between clinical and histopathological diagnoses for the submucosal leiomyomas and leiomyomas case can be explained with medical records that were not fully completed. Another explanation, patients who have transmural leiomyomas, had D&C or HS as a treatment due to AUB and histopathological findings show only submucosal leiomyomas.

In our study, the clinical diagnose is based on TVUS findings and HS is used as an additional diagnostic method. Only 25.0% of the patient had a HS. The study did not use SHG as a clinical diagnostic method. Consequently, in interpreting the histopathological diagnoses, we can see that TVUS is usually used as the first choice method to identify changes in the cavity of the uterus and its walls and decide on the need for HS as a diagnostic method in case of uncertain situations. However, HS is not a substitute method, as it can only be used for the uterine cavity examination. In this case, SHG is a better choice not only to examine cavity of the uterus but also its walls. SHG plays an important role, allowing specifying endometrial pathologies more accurate then TVUS. In order to confirm diagnose and decide on further treatment tactics, endometrial aspiration biopsy is widely used in clinical practice. It is a low-invasive method that can be performed in outpatient departments or clinics by the gynecologists without general anesthesia. The endometrial sampling by pipelle has high sensitivity and specificity. Combining TVUS with pipelle sampling, the finding of endometrium pathology increase.^{17,18} Both SHG and endometrial aspiration can help to make a decision on the need for conservative or surgical treatment. Endometrial aspiration was not used in the study. In the study, the final diagnose is based on histology. Patients had hysterectomy, hystero-resectoscopy or curettage of the uterus. Despite the fact that SHG and endometrial sampling by pipelle were not

widely used in the study, these methods should be updated as a valuable tool and it should be considered in clinical practice.

5. Conclusion

The PALM-COEIN classification system should be used more in a clinical practice, to promote the ability of clinicians, researchers, and patients to speak in an equal language for better understanding and determining the causes of AUB. The most common causes of AUB were endometrial polyp, endometrial hyperplasia, leiomyoma, and submucosal leiomyoma. Most patients who experienced AUB had structural endometrial changes, but functional disorders should also be investigated. Comparing histopathological diagnoses with clinical diagnoses, it can be concluded that TVUS is not a sufficiently accurate method to diagnose the cause of AUB. The SHG and HS should widely be used in clinical practice to investigate AUB, as well as endometrial sampling with pipelle. It is necessary to take an endometrial biopsy to confirm the cause of AUB. The study should be investigated further to include a greater number of study groups.

6. Source of Funding

None.

7. Conflicts of Interest

The author(s) have no conflicts of interest relevant to this article.

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