Assessment of Patients with Abnormal Uterine Bleeding in the Reproductive Period According to the PALM-COEIN Classification System

Pinar Solmaz Hasdemir**, Mustafa Ulusoy1, Esat Calık1, Ulas Solmaz2 and Tevfik Guvenal1

1Celal Bayar University School of Medicine, Department of Obstetrics & Gynaecology, Manisa, 45000 Turkey
2Celal Bayar University School of Medicine, Department of Family Physics, Manisa, 45000 Turkey
3Tepecik Education and Research Hospital, Obstetrics and Gynaecology Clinic, Izmir, 35000 Turkey

*Corresponding author: Pinar Solmaz Hasdemir, Celal Bayar University School of Medicine, Department of Obstetrics & Gynaecology, Manisa, 45000, Turkey, Tel: +(90) 236 444 42 28, Fax: +(90) 236 233 80 40, Email: solmazyildiz@yahoo.com

Abstract

Aim: The aim of this study is to assess reproductive-age patients with abnormal uterine bleeding according to the new International Federation of Gynecology and Obstetrics classification system (PALM-COEIN) and practicability of this classification system at a gynecologic out-patient clinic of a tertiary reference center.

Methods: A total of 163 reproductive-age patients experiencing abnormal uterine bleeding were included in this prospective study. Medical history, physical examination, ultrasonography, and any necessary additional imaging techniques were performed according to the PALM-COEIN classification system. The diagnostic value of this new classification system and satisfaction of the resident physicians who used this system were assessed with a questionnaire.

Results: The median age of the subjects was 30 years (range 13-53). The two most common causes of abnormal uterine bleeding were ovulation dysfunction (69.9%), followed by endometrial etiologies (17.2%). Forty (24.5%) patients were classified in more than one etiology group. Endometrial sampling was performed in 17.2% of patients, and magnetic resonance imaging was performed in two patients. Medical treatment was administered to 53.9% of the patients. A questionnaire among resident physicians (n=7) revealed that this system is practical and easy to use.

Conclusion: The PALM-COEIN classification is a practical way of determining the etiology and choosing the appropriate treatment modality in patients with abnormal uterine bleeding in out-patient clinic.

Keywords: Abnormal uterine bleeding, Classification system, Endometrial polyp, FIGO, PALM-COEIN

Introduction

Abnormal uterine bleeding (AUB) is a common health problem for about 30% of reproductive-age women and is experienced by 15-20% of women attending outpatient gynecology clinics [1].

Currently used classification system of AUB is nomenclature based and characterized by lack of standardized methods for investigation and categorization of potential etiologies, therefore a new classification system had been introduced by the International Federation of Gynecology and Obstetrics (FIGO) in 2011 [2]. This classification system is called PALM-COEIN. PALM stands for the pathologies associated with uterine structural anomalies (Polyps, Adenomyosis, Leiomyoma, Malignancy and endometrial hyperplasia), and COEIN stands for the pathologies not associated with uterine structural anomalies (Coagulopathy, Ovulatory dysfunction, Endometrial causes, Iatrogenic, Not yet classified). The PALM-COEIN system classifies uterine bleeding abnormalities based on a structured evaluation of the patient identifying possible causes or contributors to the symptom. This system was developed because of the non-standardized nature of terminology such as menorrhagia, metrorrhagia, and dysfunctional uterine bleeding, and it does not accept the use of these terms in describing abnormalities in uterine bleeding patterns [3].

The American College of Obstetricians and Gynecologists (ACOG) accepted this classification system in 2012 and recommends its use in the diagnosis and management of AUB cases [4]. After initial assessment and stabilization, the etiologies of acute AUB should be classified using the PALM-COEIN system [5,6]. Any evaluation...
Materials and Methods

A total of 163 consecutive non-pregnant patients with AUB presenting to the outpatient gynecology clinic of a University Hospital were prospectively included between March 2014 and September 2014. Medical history (including systemic illnesses, drug use, contraception, weight changes, detailed menstrual history), physical examination, routine ultrasound, and any necessary additional imaging techniques were performed according to the PALM-COEIN classification system [2,3]. The diagnostic value and practicability of this new classification system was also assessed by resident physician satisfaction survey.

PALM-COEIN Classification components were defined as follows;

P (polyps): Suspected by ultrasound (hyperechogenic focus or >12 mm endometrial thickening) and diagnosed and treated by hysterectomy. Two patients who refused the hysteroscopic examination were evaluated by saline infusion sonography.

A: Adenomyosis was suspected by medical history and ultrasound (asymmetrical myometrial appearance accompanied a large uterus); and diagnosed by magnetic resonance imaging (MRI).

L: Leiomyomas were evaluated and diagnosed by ultrasound. Size, location and existence of endometrial deviations were noted.

M: If malignant/premalignant lesion was suspected, endometrial biopsy was performed by pipelle biopsy or curettage.

C: Coagulopathy was suspected by a structured medical history [3,7] and diagnosed by coagulation tests including full blood count, serum ferritin level, prothrombin time (PT), activated partial thromboplastin time (APTT), von Willebrand factor (VWF), factor VII (FVII) levels and liver and kidney function tests.

O: Ovulatory dysfunction was assessed in three sub-categories as endocrinopathies, extremes of reproductive age (adolescence [ages between 13-18] and premenopausal period [ages after 40 to menopause]) and drug usage which were related to dopamine metabolism, steroids and anti-psychothis.

E: Endometrial etiologies included anticoagulant drug usage and endometrial infections. Chlamydial infections were diagnosed by clinical history and cervical examination by speculum. Chlamydial cultures were not performed routinely.

I: Intrauterine device (IUD), drugs (anticonvulsants and antibiotics which metabolized at liver like rifampicin) were considered in iatrogenic category.

N: Arterio-venous malformations, smoking (not a reason, but a possible risk factor for AUB) and not yet classified patients were considered under this sub-title.

The term ‘abnormal uterine bleeding’ describes any departure from any of the four characteristics of menstrual bleeding: frequency of menses (days), regularity of menses (cycle to cycle variation over 12 months), duration of flow (days), and volume of monthly blood loss (mL). Values between the 5th and 95th percentile were accepted as normal for the population [8]. The term amenorrhea was used to describe the absence of menstrual bleeding during a six-month reference interval [8].

A physician satisfaction survey was performed among residents who had had at least two months active work at outpatient clinic during the study period. Seven residents who used PALM-COEIN Classification System were asked to choose a number from 1 to 10 according to their satisfaction rate in order to determine the practicability of this system (1: minimum and 10: maximum), if they prefer to use this classification in their future practice and main advantages and disadvantages of the system.

The study was approved by the Institutional Research Ethics Committee (the approval date and number were 2nd January, 2014 and 20478486-07) and informed consent was obtained by all study participants. Statistical analysis was carried out using Predictive Analytics Software (PASW), version 21.0 for Windows (SPSS, Chicago, IL). Descriptive analysis was used for statistical estimation. Median values with range (minimum-maximum) were given for abnormally distributed variables. Chi-square testing was used for comparisons of pathologies between different age groups. P-value <0.05 was considered statistically significant.

Results

The study population consisted of 163 subjects. The median age was 30 years old (range, 13-53), and the median gravidity and parity rates were 1 (range, 0-10) and 1 (range, 0-6), respectively. A hundred and three (63.2%) patients were married and 25 (15.3%) patients were smoker. Complaints of excessive bleeding, irregular bleeding, and little or no bleeding were determined to be similar in terms of frequency (50 cases (30.7%), 54 cases (33.1%), and 59 cases (36.2%), respectively). Ovulation dysfunction was determined as the most frequent reason for abnormal bleeding, and adenomyosis was the least frequent reason, with just one (0.6%) confirmed case (Table 1).

Distribution of etiologies of AUB based on age is shown at Table 2. Ovulatory etiologies were the most common cause of AUB regardless of patients age, particularly among adolescence. Percentage of ovulatory etiologies decrease by age. Structural pathologies were increased with age and more than half of the patients with AUB after 40-years of age was found to have an organic pathology. There was a significant increase in leiomyomas (p=0.00018), malignant/premalignant lesions (p=0.003) and endometrial pathologies (p=0.0015) after 40-years of age compared to younger age group.

More than one etiology group was found in 48 (29.5%) of the patients, only one etiologic factor was found in 123 (75.4%) of the patients, and no etiologic factor was found in 25 (15.3%) of the patients.

Medical treatment (hormonal therapy or antibiotics) was
administered to most of the patients (53.9%), and endometrial sampling for diagnosis was required in 28 (17.2%) patients. MRI was necessary for two patients who were thought to have adenomyosis.

The summary of resident physician survey is shown in Table 3. The main advantages of the system among residents were thought to be time saving per patient because of the systematic approach and accurate diagnosis especially in patients with more extreme cases.
than one etiologic cause. The main disadvantage was reported to be due to group of patients who belong to N-group, because treatment protocol is not clear in such patients. In addition, the difficulty of diagnosing adenomyosis by ultrasound was pointed out by 3 out of 7 resident physicians.

**Discussion**

The aim in this study was to assess the availability and clinical advantages and/or disadvantages of the PALM-COEIN classification system. This new FIGO classification system was developed because of the longstanding confusion about terminology and definitions relating to AUB. It was not clear whether terms such as menorrhagia, metrorrhagia, menometrorrhagia, and dysfunctional uterine bleeding referred to symptoms or diagnoses. In addition, these terms did not give information about the etiology of the AUB. This confusion caused difficulties in the management of patients and in the designing of clinical studies about AUB [3].

A consistent and universally accepted classification system should be used by clinicians, investigators, and even patients to facilitate communication, clinical care, and research. The PALM-COEIN AUB classification system is the result of several years of collaboration among a wide spectrum of individuals involved in clinical medicine, teaching, and basic and clinical sciences [9]. Beginning with workshops in 2005, contributors from more than 17 countries on six continents developed the PALM-COEIN classification system to determine the causes of AUB in the reproductive years. The basic system comprises nine categories; the first four are defined as visually objective structural criteria (PALM); the second four are unrelated to structural anomalies (COEIN); and the final one is reserved for entities that are not yet classified (N). A draft system was developed and revised, distributed for comments, and then discussed at a meeting held in association with the 2009 FIGO World Congress in Cape Town, South Africa [10].

According to the new FIGO classification system, in the absence of structural etiology, the term “dysfunctional uterine bleeding” should be avoided and clinicians should state if AUB is caused by coagulation disorders (AUB-C), ovulation disorders (AUB-O), or endometrial primary dysfunction (AUB-E) [11]. The PALM-COEIN system allows clinicians to identify and classify women with AUB and provides reliable information on classification and for comparisons in research settings. Thus, accurate diagnosis and adequate treatment according to the etiology could be possible [12]. When we classified our patients according to the age groups, we noticed that the organic pathologies were increased with increasing age while ovulatory dysfunction was a more common reason for AUB in adolescence. So, detailed history taking for example asking about the body-mass index in patients with younger ages for polycystic ovary syndrome could be possible. This system also provides an approach to AUB in non-pregnant reproductive-age women [5]. According to the Society of Obstetricians and Gynecologists of Canada, implementing the guideline recommendations will improve the health and well-being of women with abnormal uterine bleeding. However, the economic cost of implementing these guidelines in the Canadian health care system should be considered [15].

In our study, this classification system was easy to implement and easy to use, especially among resident physicians who might be confused about the etiologies of the wide range of complaints associated with AUB. In addition, treatment of the pathology was easier when the etiology for abnormal bleeding could be determined. As we found most of the patients had more than one possible etiologic factors, this classification provides a step by step approach to the AUB patient. There was only one diagnosis of adenomyosis, possibly because of the diagnostic difficulty of this pathology using physical examination and ultrasound. Magnetic Resonance Imaging (MRI) is a relatively expensive method for diagnosing adenomyosis, and specific ultrasonographic criteria should be described in future studies to decrease the need for MRI in diagnosing this condition. Munro et al. emphasized that ‘investigations should be performed only if they will make a material difference to the management approaches that can be offered. This should be an important consideration when a range of costly high-technology tests are available or when certain tests only have limited availability’ [16].

The PALM-COEIN classification system is generally used in cases of heavy and/or irregular menstruation [5]. However, 59 (36.2%) of our subjects complained of little and/or no bleeding; these patient groups should be discussed in detail in the literature about this new classification.

In conclusion, PALM-COEIN classification is a practical way of determining the etiology and choosing the appropriate treatment modality in patients with abnormal uterine bleeding in outpatient clinic.

**Conflicts of Interest**

All authors declare that there is no conflicts of interest with this work.

**References**


