SCIE DOI: 10.14744/scie.2019.48303
South. Clin. Ist. Euras. 2020;31(1):16-20

Original Article

Does Abnormal Uterine Bleeding in Menstrual Cycles Predispose Postpartum Bleeding? A Prospective Study

Ali Doğukan Anğın,[1] Kazibe Koyuncu,[1] İsmet Gün,[2] Lokman Tekin Ertekin,[1] Önder Sakin,[1] Emine Eda Akalın,[1] Muzaffer Seyhan Çıkman,[1] Ahmet Kale,[1] Engin Ersin Şimşek[3]

[1]Obstetrics and Gynecology Clinic, University of Health Sciences, Kartal Dr. Lütfi Kırdar Training and Research Hospital, İstanbul, Turkey
[2]Obstetrics and Gynecology Clinic, University of Health Sciences, Sultan Abdülhamit Han Training and Research Hospital, İstanbul, Turkey
[3]Family Medicine Clinic, University of Health Sciences, Kartal Dr. Lütfi Kırdar Training and Research Hospital, İstanbul, Turkey

Submitted: 16.04.2019
Accepted: 11.08.2019

Correspondence: Ali Doğukan Anğın, Sağlık Bilimleri Üniversitesi, Kartal Dr. Lütfi Kırdar Eğitim ve Araştırma Hastanesi, Kadın Hastalıkları ve Doğum Kliniği, İstanbul, Turkey
E-mail: dralidogukan@gmail.com

Keywords: Abnormal uterine bleeding; menorrhagia; menometrorrhagia; postpartum bleeding.

ABSTRACT

Objective: Postpartum bleeding is a life-threatening obstetric problem all over the world, which needs to be well managed to reduce maternal mortality. In this study, we aim to predict postpartum bleeding by menstrual cycles of the patients.

Methods: A prospective, observational, cross-sectional study was conducted between November 2017 and July 2018. All the patients that gave labour in our clinic were evaluated and grouped. Group 1 (n=240) consisted of the patients with regular menstrual cycles, and they had no history of bleeding disorders, Group 2 (n=60) consisted of the patients with abnormal uterine bleeding as >80 mL bleeding in a period, having period before 24 days, >8 days of bleeding in a period or intermenstrual bleeding. However, they had no other history of bleeding disorder. All the patients were screened for bleeding diathesis.

Results: The mean age was 28.77±5.88 years and the mean prepartum hemoglobin was 11.76±1.36 mg/dl. 118 (39.3%) of the patients had a vaginal delivery and 182 (60.7%) had a cesarean delivery. The mean postpartum hemoglobin was 10.71±1.49 mg/dl. Group 1 had higher prepartum and postpartum hemoglobin than Group 2 (p=0.001 and p=0.003, respectively). Abnormal uterine bleeding (AUB) was correlated with prepartum (r=0.222, p=0.000) and postpartum hemoglobin (r=0.171, p=0.030). AUB was not significantly related to postpartum bleeding. Regarding fetal outcome, only neonatal intensive care unit admission was significantly related to abnormal uterine bleeding history (p=0.03).

Conclusion: Postpartum bleeding is not always a predictable status, and patients with abnormal uterine bleeding history should be expected to have lower hemoglobin levels prepartum and postpartum.

INTRODUCTION

Postpartum bleeding is one of the most important problems in obstetrics and a leading cause of maternal mortality.[1] There are many maternal and fetal risk factors for postpartum hemorrhage like abnormal placentation, placental abruption and severe preeclampsia. On the other hand, many changes in our hematological system occur in pregnancy that may cause maternal morbidity. Anemia and thrombocytopenia are the most common disorders which are consulted to the hematologist and may complicate the labour.[2]

Abnormal uterine bleeding (AUB) is a common problem in patients of reproductive ages and most of them were diagnosed as dysfunctional uterine bleeding.[3] On the other hand, unrecognized bleeding disorders may manifest as postpartum bleeding. A prior history of menorrhagia may be related to underlying coagulation problems. The most common etiologic factors are Von Willebrand Disease and hemophilia carriage.[4]

In the present study, we aim to evaluate the relationship between abnormal uterine bleeding history and postpartum uterine bleeding.

MATERIALS AND METHODS

This study was a prospective observational cross-sectional study and it was conducted from July 2018 to November 2018 in a tertiary center. Patients admitted to our hospital for the labor were included in the current study. The ethics committee approval was obtained (date: 24.10.2017; no: 2017/514/116/1). Also, written informed consent was taken from all the participants. Medical records, abnormal uterine bleeding history, obstetric and fetal outcomes of the patients were documented. Group 1 (n=240) consisted of the patients with regular menstruations and no history of bleeding disorders, Group 2 (n=60) consisted of patients with more than 80 mL (more than five pads daily) or more than eight days bleeding in a period or having period before 24 days or having intermenstrual bleeding.[5] Inclusion criteria were having pregnancy beyond 37 weeks and being at the age between 18–49. Exclusion criteria consisted of pregnancy under the age of 18, coagulation disorders, using anticoagulant or antiaggregant therapy, having leiomyoma uteri, endometrial polyps, gynecological tumors, placental invasion or adhesion abnormalities, patients with postpartum atony history, severe preeclampsia, HELLP, DIC, and any other surgical intervention on uterus except Kerr incision or restrictive episiotomy. All the patients received intramuscular methergine injection after placental abruption, and then, 10 IU oxytocin in 1000 cc 5% dextrose solution was infused at 125–150 mL/hour. Vaginal delivery was carried out with right mediolateral episiotomy and cesarean delivery with Pfannenstiel incision to the abdomen and low transverse incision to the uterus. Age, gravity, parity, height, weight, history of chronic disease, history of surgery, drug use, prepartum hemoglobin, postpartum hemoglobin (24 hours later), intrapartum and postpartum complications, need for transfusion, fetal weight, one minute and five minute APGAR scores and neonatal intensive care unit (ICU) admission were recorded from clinical database.

Statistical analysis

Statistical analysis was performed using SPSS, version 24.0 (SPSS, Chicago, Illinois). Due to the normal distribution of all data, an independent T-test was used for the determination of differences between the groups. Categorical data were assessed using the chi-square test. Correlation between variables was assessed using Pearson's correlation test. P<0.05 was considered statistically significant.

RESULTS

A total of 365 patients were assessed for this study and 65 patients were excluded depending on having chronic diseases (n=32), severe preeclampsia (n=20), placental invasion abnormalities (n=4) and coagulation disorders (n=9). Three hundred patients were included in the present study. The mean age of the patients was 28.77±5.88 (17–48). The mean prepartum and postpartum hemoglobin was 11.76±1.36 mg/dL and 10.71±1.49 mg/dL, respectively. The change in the mean postpartum hemoglobin was 1.12±0.9 mg/dL. The mean prepartum and postpartum hematocrit was 35.6±3.67 and 32.18±4.35, respectively. The change in the mean postpartum hematocrit was 3.36±2.48. The demographic characteristics of the patients and the laboratory results are summarized in Table 1.

Table 1. Demographic and laboratory characteristics of the patients

Variables	Mean±SD	Minimum	Maximum
Age (year)	28.77±5.88	17	48
Parity	1.58±1.18	1	5
Gestation weeks at delivery	38.7±1.9	32	41
BMI (kg/m^2)	22.11±4.54	18.13	38.85
Prepartum hemoglobin values (g/dl)	11.76±1.36	7.0	14.9
Postpartum hemoglobin values(g/dl)	10.71±1.49	5.0	14.6
Prepartum hematocrite values	35.6±3.67	21.2	44.9
Postpartum hematocrite values	32.18±4.35	16.3	41.1
Birth weight (gr)	3241±577	565	4535
APGAR scores 1th minute	8.01±1	1	9
APGAR scores 5th minute	8.9±0.88	1	10
Mode of delivery, n (%)			
Vaginal delivery	118 (39.3)		
Cesarean section	182 (60.7)		
Neonatal ICU admission	18 (6)		

BMI: Body mass index; APGAR: Activity-Pulse-Grimace-Appearence-Respiration; ICU: Intensive care unit.

Patients with regular menstrual cycles (Group 1) and with abnormal uterine bleeding (Group 2) were compared regarding the obstetric and fetal outcome. Age, parity, and gestation weeks of delivery were not statistically different between the groups (p=0.146, p=0.292, p=0.736). One minute (7.95±1.4, 7.70±1.66 Group 1 and 2, respectively) and five minutes (8.77±1.50, 8.68±1.62 Group 1 and 2, respectively) APGAR scores and the birth weight of fetus (3223±574.5, 3.304±587.5 Group 1 and 2, respectively) were not statistically different between the groups (p=0.254, 0.699, 0.321). The type of delivery of the patients was also similar, the vaginal delivery rate was 40.4% in Group 1, and 35% in Group 2, whereas the cesarean section rate was 59.6 % in Group 1 and 39% in Group 2 (p=0.464). Group 1 had statistically different higher prepartum (12.4±1.06) and postpartum hemoglobin levels (11.03±1.38) than Group 2 (11.66±1.35, 10.53±1.60) (p=0.000). Also, neonatal ICU admission was statistically different between groups, Group 1 ICU admission rate was 3.75%, and 15% in Group 2 (p=0.003). The results of the patients are summarized in Table 2.

DISCUSSION

In this study, we aimed to evaluate the relationship between abnormal uterine bleeding and postpartum bleeding. Abnormal uterine bleeding is a common problem among the women of reproductive ages, and its prevalence is approximately 0.53%.[6] In other studies, it was found to affect 20% of the women who menstruate.[7] In 2015, FIGO hosted a workshop about abnormal uterine bleeding and announced a new definition and also a classification for it.[8] That is called PALM-COEIN classification, which is an acronym for the etiology of abnormal uterine bleeding. Here in this study, we reported the patients who do not have any history of polyps, adenomyosis, leiomyoma, malignancy, ovulatory dysfunction, endometrial abnormality or iatrogenic causes.

In the literature, it has been reported that patients with AUB may have underlying bleeding diathesis like von Willebrand disease, immune thrombocytopenia, or platelet function defects are up to 15–24%.[9,10] It is estimated that 20% of the patients with bleeding diathesis remain undiagnosed and postpartum bleeding may be the first symptom.[7] Besides bleeding, diathesis may be associated with the first trimester bleeding, abortus imminence and placental abnormalities.[11–14] In our study, patients with bleeding diathesis were excluded.

In 2017 American College of Obstetricians and Gynecologists changed the definition of postpartum bleeding to "[1] cumulative blood loss ≥1000 mL or[2] bleeding associated with signs/symptoms of hypovolemia within 24 hours of the birth process regardless of delivery route" to reduce the number of women inappropriately labeled with this diagnosis.[15] Dilla et al.[16] recommended risk stratification for pregnant women and they suggested that women with coagulopathy should be classified as the high-risk group.ACOG also suggested a similar risk assessment too, I, but the sensitivity was only 60% and negative predictive value for low-risk patients was 1%. Therefore, they emphasized that every patient should be monitored carefully.

Bleeding risk of the patient should be evaluated prepartum and precautions should be taken before delivery. California Maternal Quality Care Collaborative Peripartum Hemorrhage Risk Groups and Prenatal Pretransfusion Testing Recommendations claimed that two units of red blood cells, should be cross-matched and prepared for the transfusion at least for the patients with high

Table 2. Comparison of the obstetric and fetal outcomes of groups

Variables	Group 1 n=240 (Mean±SD)	Group 2 n=60 (Mean±SD)	Significance p	r*	Significance p*
Age (year)	28.49±5.78	29.73±6.18	0.146	0.88	0.129
Parity	2.69±1.38	2.50±1.21	0.292	-0.26	0.652
Gestation weeks	38.5±1.88	37.9±1.92	0.736	0.002	0.967
BMI (kg/m^2)	28.9±4.65	29.62±4.05	0.291	0.473	0.42
Prepartum Hgb (g/dl)	11.66±1.35	12.4±1.06	0.000	0.222	0.000
Postpartum Hgb (g/dl)	10.53±1.60	11.03±1.38	0.003	0.171	0.03
Hgb decrease	1.12±0,94	1.18±0.93	0.644	0.793	0.015
Hct decrease	3.36±2.48	3.67±3.02	0.465	0.821	0.013
APGAR score 1 minute	7.95±1.4	7.70±1.66	0.254	-0.073	0.208
APGAR score 5 minute	8.77±1.50	8.68±1.62	0.699	-0.023	0.685
Birth weight (gr)	3223±574.5	3.304±587.5	0.321	0.058	0.313
Neonatal ICU admission, n (%)	9 (3.75)	9 (15)	0.003	0.001	0.189
Vaginal delivery, n (%)	97 (40.4)	21 (35)	0.464	0.44	0.44
Cesarean section, n (%)	143 (59.6)	39 (60)			

*Spearman- Pearson correlation analysis test results; BMI: Body mass index; Hgb: Hemoglobin; Hct: Hematocrite; ICU: Intensive care unit.

risk (known coagulopathy, active bleeding on admission, platelets <100.000, hematocrit <30, suspected placenta accreta, percreta or placenta previa and low-lying placenta).[17,18] Transfusion protocols are also debatable. ACOG recommendation for the initial transfusion ratio for RBC: FFP (fresh frozen plasma): platelets are 1:1:1.[19] On the other hand, there are some studies suggesting a higher ratio of FFP: RBC.[20, 21] However, there are lacking prospective high-quality studies about transfusion protocols, so this topic should be supported with further studies.

In this study, we found that neonatal ICU admission was higher in patients with AUB. Despite that, we had a very small number of newborns admitted to ICU. A prospective study with more patients might be more appropriate for drawing that conclusion.

Limitations of the current study were the small number of patients and the single-center enrollment. However, in a tertiary center, it was hard to find the patients without exclusion criteria for our study (risk-free patients). All of the patients had undergone a detailed survey to eliminate the patients with any exclusion criteria. To our knowledge, this is the first study that searches the relationship between postpartum bleeding and abnormal uterine bleeding in the Turkish population, and this may be the strength of our study. It is important to create a risk assessment tool for the Turkish population, and this study may be of use.

Herein, we found that AUB is related to low prepartum and postpartum hemoglobin. Patients with menometrorrhagia before pregnancy should be monitored closely in labour. Menometrorrhagia history may be used as a predictive factor for the blood transfusion in risk-free patients. Until developing a widely accepted tool for the risk assessment of postpartum bleeding, we could use the history of menometrorrhagia as a reliable predictor. It may be considered as an important part of the development of the risk assessment tool for postpartum bleeding if supported with further prospective studies.

Ethics Committee Approval

Approved by the local ethics committee (date: 24.10.2017; no: 2017/514/116/1).

Peer-review

Internally peer-reviewed.

Authorship Contributions

Concept: A.D.A., İ.G.; Design: İ.G., K.K.; Supervision: E.E.Ş.; Data: L.E., M.S.Ç., E.D.A.; Analysis: Ö.S., L.E., A.K.; Literature search: M.S.Ç., E.E.Ş.; Writing:K.K., E.D.A, A.D.A, A.K.; Critical revision: Ö.S., E.E.Ş.

Conflict of Interest

None declared.

REFERENCES

1 Sheldon WR, Blum J, Vogel JP, Souza JP, Gülmezoglu AM, Winikoff B, et al. Postpartum haemorrhage management, risks, and maternal outcomes: findings from the World Health Organization Multicountry Survey on Maternal and Newborn Health. BJOG 2014;121:5–13.

2. Townsley DM. Hematologic complications of pregnancy. Semin Hematol 2013;50:222–31. [CrossRef]
3. Franchini M, Favaloro EJ, Lippi G. Mild hemophilia A. J Thromb Haemost 2010;8:421–32. [CrossRef]
4. Kadir RA, Economides DL, Sabin CA, Owens D, Lee CA. Frequency of inherited bleeding disorders in women with menorrhagia. Lancet 1998;351:485–9. [CrossRef]
5. Fraser IS, Critchley HO, Munro MG, Broder M; Writing Group for this Menstrual Agreement Process. A process designed to lead to international agreement on terminologies and definitions used to describe abnormalities of menstrual bleeding. Fertil Steril 2007;87:466–76. [CrossRef]
6. Fraser IS, Critchley HO, Munro MG, Broder M. Can we achieve international agreement on terminologies and definitions used to describe abnormalities of menstrual bleeding?. Hum Reprod 2007;22:635–43. [CrossRef]
7. Kjerulff KH, Erickson BA, Langenberg PW. Chronic gynecological conditions reported by US women: findings from the National Health Interview Survey, 1984 to 1992. Am J Public Health 1996;86:195–9. [CrossRef]
8. Munro MG, Critchley HO, Broder MS, Fraser IS; FIGO Working Group on Menstrual Disorders. FIGO classification system (PALM-COEIN) for causes of abnormal uterine bleeding in nongravid women of reproductive age. Int J Gynaecol Obstet 2011;113:3–13. [CrossRef]
9. Oehler MK, Rees MC. Menorrhagia: an update. Acta Obstet Gynecol Scand. 2003;82:405–22. [CrossRef]
10. Kouides PA, Byams VR, Philipp CS, Stein SF, Heit JA, Lukes AS, et al. Multisite management study of menorrhagia with abnormal laboratory haemostasis: a prospective crossover study of intranasal desmopressin and oral tranexamic acid. Br J Haematol 2009;145:212–20. [CrossRef]
11. Committee on Adolescent Health Care; Committee on Gynecologic Practice. Committee Opinion No.580: von Willebrand disease in women. Obstet Gynecol 2013;122:1368–73. [CrossRef]
12. James AH. More than menorrhagia: a review of the obstetric and gynaecological manifestations of bleeding disorders. Haemophilia 2005;11:295–307. [CrossRef]
13. Committee on Practice Bulletins-Obstetrics. Practice Bulletin No. 183: Postpartum Hemorrhage. Obstet Gynecol 2017;130:e168–e86.
14. Dilla AJ, Waters JH, Yazer MH. Clinical validation of risk stratification criteria for peripartum hemorrhage. Obstet Gynecol 2013;122:120–6. [CrossRef]
15. Bingham D, Melsop K, Main E. The California Maternal Quality Care Collaborative (CMQCC). CMQCC Obstetric Hemorrhage Hospital Level Implementation Guide. Palo Alto (CA): California Maternal Quality Care Collaborative; 2010. p. 94.
16. Laurence ES, Goffman D, Caughey AB. ACOG practice bulletin: Clinical management guidelines for obstetrician-gynecologists. Obstetrics and Gynecology 2017;130:e168–e86.
17. Pacheco LD, Saade GR, Costantine MM, Clark SL, Hankins GD. An update on the use of massive transfusion protocols in obstetrics. Am J Obstet Gynecol 2016;214:340–4. [CrossRef]
18. Nascimento B, Callum J, Rubenfeld G, Neto JB, Lin Y, Rizoli S. Clinical review: fresh frozen plasma in massive bleedings-more questions than answers. Crit Care 2010;14:202. [CrossRef]
19. Holcomb JB, Tilley BC, Baraniuk S, Fox EE, Wade CE, Podbielski JM, et al. Transfusion of plasma, platelets, and red blood cells in a 1:1:1 vs a 1:1:2 ratio and mortality in patients with severe trauma: The PROPPR randomized clinical trial. JAMA 2015;313:471–82.

20. Artunç B, Birge Ö. Ruptured Ectopic Pregnancy after Bilateral Tubal Ligation. J Kartal TR 2015;26:177–8. [CrossRef]

21. Uçkun S, Kuzucuoğlu T. Pregnancy with Atonic Bleeding Due to Eclampsia. J Kartal TR 2016;27:75–8. [CrossRef]

Postpartum Hemorajide Mens Dönemi Menometroraji Predispozan Bir Faktör müdür? Prospektif Bir Çalışma

Amaç: Doğum sonrası kanama tüm dünyada önemli bir sorundur ve maternal ölüm oranını azaltmak için çözülmesi gerekmektedir. Amacımız doğum sonrası kanamayı jinekolojik anamnez yoluyla tahmin etmekti.

Gereç ve Yöntem: Kasım 2017-Temmuz 2018 tarihleri arasında prospektif gözlemsel bir kesit çalışması yapıldı. Doğum için başvuran tüm hastalar değerlendirildi ve gruplandı. Grup 1 (n=240), düzenli adetleri olduğunu ve kanama bozukluğu öyküsü olmadığını iddia eden hastalardan oluşturuldu. Grup 2 (n=60), anormal uterin kanaması olan (menstrüasyonda >80 mL kanama ve/veya 8 günden daha uzun süreli adet dönemi ve/veya 24 günden daha kısa süreli siklus ve/veya adetler arası kanama) hastalardan oluşuyordu ve başka bir kanama bozukluğu öyküsü yoktu. Hastalar kanama diatezi açısından araştırıldı.

Bulgular: Ortalama yaş 28.77±5.88 yıl ve ortalama doğum öncesi hemoglobin değeri 11.76±1.36 mg/dl idi. Hastaların 118'i (%39.3) vajinal doğum, 182'si (%60.7) sezaryen ile doğum yaptı. Ortalama doğum sonrası hemoglobin değeri 10.71±1.49 mg/dl idi. Grup 1'de doğum öncesi ve doğum sonrası hemoglobin değerleri Grup 2'ye göre daha yüksekti (sırasıyla, p=0.001 ve p=0.003). Anormal uterin kanama (AUK), prepartum (r=0.222, p=0.000) ve postpartum hemoglobin değerleri ile koreleydi (r=0.171, p=0.030). Grup 1'de postpartum ve postpartum hematokrit değerleri Grup 2'den yüksek bulundu (sırasıyla, p=0.001 ve p=0.021). AUK, doğum sonrası kanama ile ilişkili bulunmadı. Fetal sonuçlarla alakalı olarak (1. dakika ve 5. dakika APGAR skoru, yenidoğan YBÜ giriş ve doğum ağırlığı), sadece yenidoğan YBÜ kabulü, anormal uterin kanamaya sahip olmakla anlamlı şekilde ilişkiliydi (p=0.03).

Sonuç: Doğum sonrası kanama her zaman öngörülebilir bir durum değildir ve doğum öncesi anormal uterin kanama anamnezi olan hastaların hemoglobin düzeylerinin doğum öncesi ve doğum sonrasında daha düşük olması beklenebilir.

Anahtar Sözcükler: Anormal uterin kaanama; menoraji; menometroraji; postpartum kanama.