

Acute Management and Subsequent Diagnostic Evaluation of an Adolescent Presenting with Severe Iron Deficiency Anemia who Required Blood Transfusion

Karine Delroux-Spalding, Ph.D., D.O., Deann L. Fosnocht, M.D. and Tara M. Higgins, M.D.
UPMC Lititz, Lititz, PA

INTRODUCTION

This presentation focuses on the extreme clinical presentation of the consequences of Heavy Menstrual Bleeding (HMB) in a young postmenarcheal adolescent who was evaluated for severe anemia and had to be hospitalized and transfused.

HMB is defined as excessive menstrual blood loss of over 80 ml per cycle, or a duration of menstruation in excess of 7 days. Moreover, it can interfere with all aspects of a woman's life, from physical health and social life to emotional state. HMB affects about 40% of adolescents, with the most common cause for 20% of them being a bleeding disorder. About 33% of the adolescents who are hospitalized have a bleeding disorder, with Von Willebrand disease and platelet dysfunction being the most common etiologies. In addition, anovulation--a cause of HMB--is common in new postmenarcheal adolescents due to immature HPO axis and can be superimposed with a bleeding disorder.

HMB alone can not only provoke anxiety in a young girl but also heighten it. Because of the risk of bleeding through clothes at school HMB can hinder engagement in school sports and other activities. The social and emotional impacts are intertwined with HMB's direct effect on the physical health of the young adolescent. Iron deficiency anemia is a direct consequence of HMB in 9% of cases, and has been linked to increased headaches, fatigue, anxiety, depression, declined cognition, reduced school attendance and performance, and decreased sport involvement.

The purpose of this presentation is to bring awareness to HMB in postmenarcheal adolescent girls and its debilitating consequences on their overall health and quality of life.

Early identification of the young patients who have HMB using the appropriate tools is key in early diagnosis of a bleeding disorder and/or of iron deficiency anemia, which should in turn prompt early intervention and support.

CASE REPORT INFORMATION

A twelve-year-old female presented to the emergency room with dizziness for the previous 2 months, worsening dyspnea, fatigue, bouts of vision loss, syncopal episodes and, more recently, nausea with abdominal pain. She reported being an avid dancer and had to stop this activity because of fatigue and dyspnea, which made her very depressed. She had missed school several times because of fatigue, and was not able to walk on her own in the previous 3 days. She had started menarche eight months prior to that presentation. Two of her sisters and her mother suffer from HMB. She reported that her periods can last for 10 days with heavy bleeding for the first 4-5 days.

RESULTS

Vital Signs

Temp: 37.3 °C (99.1 °F)
Pulse: 102
BP: 98/50
Resp: 16
SpO2: 100 %

Physical Examination

Patient appears weak in general, her physical examination is otherwise normal except noted conjunctival and skin pallor.

RESULTS

WBC	8.8	5.2 - 9.7 K/ μ L
RBC	2.80	3.74 - 4.93 M/ μ L
Hemoglobin	5.9	11.0 - 14.3 G/DL
Hematocrit	19.1	31.4 - 41.0 %
MCV	68.3	80.8 - 87.7 FL
MCH	21.2	28.2 - 30.7 PG
MCHC	31.0	33.9 - 35.6 G/DL
Platelets	186	180 - 307 K/ μ L
MPV	9.0	7.5 - 8.3 FL
RDW	19.6	12.8 - 14.6 %
PT	14.2	9.4 - 12.5 SECONDS
INR	1.2	0.8-1.1
Ferritin	6	11 - 307 NG/ML
Iron	8	50 - 170 UG/DL
Transferrin	336	192 - 382 MG/DL
TIBC Cal	470	250 - 450 UG/DL
Iron sat	2	15 - 50 %

Hematologic Studies

von Willebrand screen and hemoglobin electrophoresis came back normal after she was discharged. Her platelet function assay results are pending.

Imaging

Abdominal and Pelvic US were negative for ovarian torsion, hemorrhagic ovarian cyst, appendicitis, and ectopic pregnancy.

TREATMENT

She received one unit of packed red blood cells during her admission. She was started on Norethindrone and then continuous combined oral contraceptive and oral iron supplements. Follow up with Pediatric Hematology, obstetrics and gynecology.

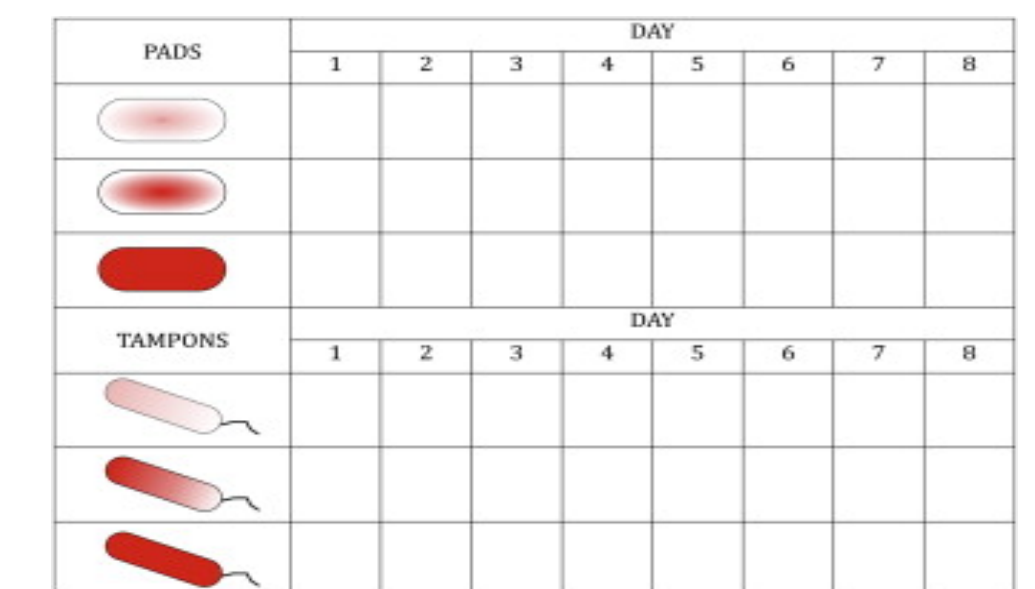
DISCUSSION

This case involved a newly postmenarcheal adolescent who presented with severe symptomatic anemia and iron deficiency that was attributed to HMB.

While a bleeding disorder can be identified when adolescents clinically present with HMB, this case report has yet to identify the cause of it. This case report underscores the need for systematic quantification of menstrual blood loss in adolescents suffering from HMB. Because most adolescents do not know they have HMB, earlier and more consistent monitoring of blood count and iron studies should enable providers to identify and manage patients at higher risk of severe anemia.

CONCLUSION

The lack of a reliable tool to monitor blood loss can result in the suboptimal care of these patients. The American College of Obstetricians and Gynecologists (ACOG) has called for the inclusion of key menstrual data as additional vital signs as part of the care of adolescent girls. During evaluation of adolescent girls, various tools are available for assessing menstrual loss per cycle, including blood-loss charting and questionnaires. Use of such tools has been rare.



Pictorial Blood Loss Assessment Chart.

We propose to implement a Quality Improvement project to assess HMB in adolescent girls using questionnaires and periodic blood loss charts with the overall goal of developing a software solution.

REFERENCES

- ACOG Committee Opinion. Screening and Management of Bleeding Disorders in Adolescents With Heavy Menstrual Bleeding. *Obstetrics and Gynecology*, Sept 2019, vol 134(3): 71-83.
- Zia, A., Jain, S., Kouides, P., Zhang, S., Gao, A., Salas, N., Lau, M., Wilson, E., DeSimone, N., and Sarode, R. Bleeding disorders in adolescents with heavy menstrual bleeding in a multicenter prospective US cohort. *Haematologica*, 2020, vol 105 (7): 1969-1976.
- Revel-Vilk, S., Paltiel, O., Lipschuetz, M., Ilan, U., Hyam, E., Shai, E., Varon, D., and Revel, A. Underdiagnosed Menorrhagia in Adolescents is Associated with Underdiagnosed Anemia. *The Journal Of Pediatrics*, 2012, vol 160 (3): 468-472.