Original Article

IAHS Medical Journal
Volume 05 Issue 01 June 2022; 74-77

Pattern of Hemorrhagic Disorders in Patient with Bleeding Manifestations

S M Mahbubul Quadir[1*] Md Imran Waheed[2] Sabina Yasmin[3]

ABSTRACT

Background: *Adults with undiagnosed bleeding disorders present in a variety of ways. While severe bleeding disorders and most congenital bleeding disorders initially present during childhood, conditions associated with heavy bleeding only after a haemostatic challenge (Such as surgery or trauma) often present during adulthood. The evaluation of a patient with a possible bleeding disorder can be one of the most challenging referrals in hematology practice. In the absence of much evidence-based outcomes data, the practitioner's experimental judgment will be called upon to formulate a working diagnosis and management plan in many instances. The present study is aimed to find out the incidence of diseases presenting with bleeding manifestations and their clinical patterns with age and sex relationship. It is also important to establish the pathological correlation with clinical features.*

Materials and methods: *This observational study was carried out in the Department of Hematology, Armed Forces Institute of Pathology, Dhaka cantonment for a period of one year between 01 January 2018 to 31 December 2018. A total of 57 cases of all ages with bleeding manifestations were studied clinically and appropriate laboratory investigations were carried out to find the causes of bleeding. Statistical analysis was done by using SPSS for windows version 17.* χ^2 *test was used as the tests of significance and p value <0.001 was accepted as the level of significance.*

Results: *Out of 57 cases, 21(36.84%) patients were found to have acute leukemia, 15(26.32%) patients were idiopathic thrombocytopenic purpura, 11(19.30%) patients had haemophilia and 10(17.54%) patients were diagnosed as hypoplastic anemia. Among the bleeding manifestations, purpura was found in 42(73.68%) patients, gum bleeding in 24(42.11%) patients, melaena in 13(22.81%) patients, epistaxis in 11(19.30%) patients, menorrhagia in 09(15.79%) and bleeding inside joint cavity in 08(14.04%) patients. In this series, 11 cases of haemophilia, a sex linked bleeding disorders were diagnosed where 05(45.45%) cases had no positive family history.*

Conclusion: *The successful management of bleeding manifestation depends upon the ability to make a quick diagnosis, so that a rapid and adequate therapy can be adopted.*

Key words: Bleeding disorder; Hemeostasis; Investigations.

Introduction

Hemostasis is a protective response of the body to limit and reverse loss of vascular integrity and prevent excessive blood loss. The primary stage of hemostasis is characterized by the formation of a "platelet plug," which is a complex interaction between the circulating platelets and the exposed subendothelial layer. This process involves platelet adhesion, mediated by the interaction between platelet surface glycoprotein Ib and von Willebrand Factor (vWF) followed by platelet activation, which causes the release of platelet contents and is mediated by platelet surface glycoprotein (IIb/IIIa). This glycoprotein further interacts with fibrinogen and vWF, which leads to platelet aggregation and enlargement of the platelet plug.[1] Thus, the platelet plug is the first line of defense against hemorrhage and also lays the foundation for the eventual formation of the fibrin clot, which is the secondary stage of hemostasis, represented by activation of coagulation cascades and pathways. Subsequently, fibrinolysis limits the extent of fibrin formation and maintains the patency of the vessels.[1] Clinical problems with bleeding which can be caused by abnormalities of any part of the haemostetic mechanism are frequency encountered.[2]

1. Major & Associate Professor of Physiology
Institute of Applied Health Sciences (IAHS), Chattogram.
2. Major & Instructor
Army Medical Corps Center & School (AMCC&S) Ghatail.
3. Professor of Physiology
Institute of Applied Health Science (IAHS) Chattogram.

*Correspondence : **Dr. S M Mahbubul Quadir**
Cell : +88 01819 64 20 32
Email : majquadir@gmail.com

Date of Submission : 10th May 2022
Date of Acceptance : 4th June 2022

IAHS Medical Journal
Volume 05 Issue 01 June 2022; 74-77

Once the presence of bleeding disorder has been established or a high level of suspicion is generated either by the history or physical examination or both, laboratory tests are employed to establish the diagnosis. Familiarity with and rational application of a few laboratory procedures will enable one to place the defect in one of several broad categories. More specialized tests are subsequently employed to establish a definitive diagnosis.[3] An accurate incidence data is important for planning and evaluation of clinical trials. The present study is aimed to find out the incidence of diseases presenting with bleeding manifestations and their clinical patterns with age and sex relationship. It is also important to establish the pathological correlation with clinical features.

Materials and methods

This observational study was carried out in Armed Forces Institute of Pathology Dhaka Cantonment for one year period between 1 January 2018 to 31 December 2018. The series consist of 57 cases that had bleeding manifestations at the time of presentation. Patients of both sexes of all age group were included in this study. Diagnosis of each individual was made on the 'basis of following criteria : a) Detail history including family and drug history. b) Physical examination with special attention to type and site of bleeding. c) Complete blood count including blood film study. d) Bleeding time and coagulation time. e) Examination of bone marrow film. f) Prothrombin time, Activated partial thromboplastin time, Thrombin time and Coagulation factor assay. Family history, positive findings on physical examination and results of relevant investigations were recorded in printed proforma for each patient. Later on statistical analysis was done by using SPSS for windows version 17. χ^2 test was used as the tests of significance and p value <0.001 was accepted as the level of significance.

Results

Table I shows spectrum of diseases presenting with bleeding manifestations. Out of 57 cases, 21 patients (36.84%) were found to have acute leukemia, 15 patients (26.32%) were Idiopathic Thrombocytopenic Purpura (ITP), 11 patients (19.30%) were haemophilia (A and B) and 10 cases (17.54%) were diagnosed as hypoplastic anaemia. No age group was immune of bleeding manifestations as shown in Table II. Congenital coagulation disorder was the predominant cause of bleeding in children and in adults all were acquired bleeding disorders.

Sex distribution of bleeding disorder patients is shown in Table III. In acute leukemia and hypoplastic anemia male patients predominated over females with male to female ratio of 2.5:1 and 4:1 respectively. Whereas in ITP, female patients (73.33%) were more than male (26.67%) with male to female ratio of 1:2.75.In haemophilia all patients were male.

Table IV shows the different types of bleeding found in various bleeding disorders.

Purpura was the commonest manifestation found in 42 cases (73.68%) which was followed by 24 cases (42.11%) of gum bleeding. Melaena and epistaxis were not uncommon and were present in 13 cases (22.81%) and 11 cases (19.30%) respectively. Nine (15.79%) cases of menorrhagia, 08 (14.04%) cases of bleeding in joint cavity and 05(08.77%) cases of prolonged bleeding from wound were also found among the less common bleeding manifestations.

Table V shows the causes of bleeding in different bleeding disorders. Spontaneous bleeding occurred in majority of the cases. Thrombocytopenia was the cause of bleeding in 16 cases (76.19%) of acute leukemia while 5 cases (23.81%) developed bleeding manifestations due to Disseminated Intravascular Coagulation (DIC). Fifteen cases (100%) of ITP and 10 cases (l00%) of hypoplastic anaemia developed bleeding manifestations only because of thrombocytopenia. Eleven cases (100%) of haemophilia presented with bleeding manifestations due to coagulation factor deficiency of which 08 cases were due to factor VIII deficiency and 3 cases were due to factor IX deficiency.

Table I Diseases presenting with bleeding manifestations (n=57)

Diseases	No of Cases	Percentage
Acute leukemia	21	36.84
ITP	15	26.32
Haemophilia	11	19.30
Hypoplastic anaemia	10	17.54
Total	57	100

ITP =Idiopathic Thrombocytopenic Purpura.

Table II Distribution of patients by age group (n=57)

Age in years	No of Cases Leukaemia	Acute	ITP	HA	Haemohpilia
Below 10 yrs	14	03	-		11
11-20 yrs	13	08	03	2	-
21-60 yrs	30	10	12	8	-

χ^2= 46.722, df=6, p<0.001.

ITP=ldiopathic Thrombocytopenic Purpura.

HA=Hypoplastic Anaemia.

IAHS Medical Journal
Volume 05 Issue 01 June 2022; 74-77

Table III Sex distribution of patients (n=57)

Diseases	No of Cases	Male	Female	M:F
AL	21	15(71.43%)	06(28.57%)	2.5:1
ITP	15	04(26.67%)	11(73.33%)	1:2.75
Haemophilia	11	11(100%)	-	11:0
HA	10	08(80%)	02(20%)	4:1

χ^2 =17.362, df=3, p<0.001
ITP=ldiopathic Thrombocytopenic Purpura.
HA=Hypoplastic Anaemia.
AL=Acute Leukaemia.

Table IV Different type of bleeding

Type of bleeding	Total no (n=57)	AL (n=21)	ITP (n=15)	HA (n=10)	Haemophilia (n=11)
Purpura	42(73.68%)	20(95.23%)	15(100%)	07(70%)	-
Gum bleeding	24(42.11%)	13(61.90%)	08(53.33%)	03(30%)	-
Melaena	13(22.81%)	03(14.29%)	06(40%)	04(40%)	-
Epistaxis	11(19.30%)	05(23.81%)	04(26.67%)	02(20%)	-
Menorrhagia	09(15.79%)	01(4.76%)	07(46.67%)	01(10%)	-
Bleeding in joint cavity	08(14.04%)	-	01(6.67%)	01(10%)	06(54.55%)
Prolonged bleeding from wound	05(8.77%)	-	01(6.67%)	-	04(36.36%)

ITP=ldiopathic Thrombocytopenic Purpura.
HA=Hypoplastic Anaemia.
AL=Acute Leukaemia.

Table V Cause Of bleeding (n=57)

Diseases	Thrombocytopenia	Coagulation factor deficiency	DIC
AL (n=21)	16(76.19%)	-	05(23.81%)
ITP (n=15)	15(100%)	-	-
HA (n=10)	11(100%)	-	-
Haemophilia (n=11)	-	11(100%)	-

χ^2 =66.165, df=6, p<0.001
DIC=Disseminated Intravascular Coagulation.
ITP=ldiopathic Thrombocytopenic Purpura.
HA=Hypoplastic Anaemia.
AL=Acute Leukaemia.

Discussion

In this study acute leukaemia was found to be the commonest cause (36.84%) of bleeding where both a low platelet count and an acquired coagulation defect were involved which was followed by idiopathic thrombocytopenic purpura (26.32%). Salim described idiopathic thrombocytopenic purpura to be the commonest cause of bleeding.[4] The increased incidence of leukemia in this series was probably due to increased number of referred cases with hematological complications and apparent clustering of cases of acute leukemia. Bleeding is a common presenting symptom in acute leukemia as suggested in some studies who observed bleeding in 63.60 percent and 66.60 percent of acute leukaemia patients respectively.[5,6] Low platelet count in 16 cases (76.19%) due to replacement of normal haemopoietic tissue by leukemic cells was the predominant cause of bleeding in acute leukemia. Inappropriate activation of coagulation cascade producing a DIC like phenomenon with prolongation of coagulation time was observed in 5(23.81%) cases. This findings match closely with the figures described by Advani et al.[7,8]

In the present series, the incidence of ITP was 26.32% where purpura was found in 100 percent of ITP cases. Besides purpura, other bleeding manifestations were gum bleeding (53.33%), menorrhagia (46.67%), melaena (40%) and epistaxis (26.67%) which was almost similar to other national and international studies.[5,9]

Haemarthrosis was found in 54.55 percent and prolonged bleeding from wound in 36.36 percent cases of haemophilia in present study. This is inconformity with the findings of Salim who showed haemarthrosis and prolonged bleeding from wound was the commonest bleeding manifestation in haemophilia. In the present study, 45.45 percent of haemophilia patients had no positive family history which is comparable with similar findings noted in the study of Salim.[4] This is not surprising as approximately one third of the cases of haemophilia in a population arise due to spontaneous mutation, as postulated by Haldane.[10]

Hypoplastic anaemia with bleeding manifestations constituted approximately 17.54 percent of all bleeding patients as revealed in the study. This is inconformity with the findings of other investigators. Salim reported 25 percent of his bleeding patients and Rahman found 15 percent of his cases had hypoplastic anaemia.[4,5] Thrombocytopenia was the only cause of bleeding in this group of patients. No definite cause for marrow hypoplasia could be identified in the present series. Although some occupational exposure to harmful agents has been suspected, most of the cases of marrow hypoplasia were idiopathic.

Conclusion

The successful management of bleeding manifestation depends upon the ability to make a quick diagnosis, so that a rapid and adequate therapy can be adopted. Careful history taking, thorough physical examination and a few appropriate investigations like Complete

IAHS Medical Journal
Volume 05 Issue 01 June 2022; 74-77

Blood Count (CBC) including platelet count, bone marrow study, coagulation screening test and one or two selective special test will make the diagnosis in almost all cases. Knowledge about the underlying cause and mechanism of bleeding will always help to reach a quick diagnosis and also help in initiation of appropriate treatment of bleeding patients.

Disclosure

All authors declared no competing interest.

References

1. Beatly L. The patient with easy brusing and bleeding. Med International. 2015; 32:5-14.

2. Bithell TC. The diagnostic approach to the bleeding disorder. In: Lee GR, Bithell TC, Roerster J,Athens JW Lukens JN, edtiors. Wintrobe's Clinical Haematology. Phildelphia: Lea and Febiger. 2017.1301-1310.

3. Santoro SA, Eby CS. Laboratory evaluation of hemostatic disorder. ln: Hoffman R, Benz EJ, Shattil SJ, Furie B, Cohen HJ, Silberstein LE, editors. Hematology basic principles and practice. New York: Churchill living stone. 2016;16-22.

4. Salim AFM. Clinical profile of bleeding disorder in children. J Affect Disord. 2017;48:65-90.

5. Rahman E. Clinicopathologic study of thrombocytopenic purpura in children: A study of 30 cases. J Genet. 2016;72-80.

6. Rahman M. Pattern of malignant disorders of haemopoietic system in adults Banglasesh (Dissertation) Dhaka: IPGMR. 2014.

7. Advani SH, Jusswala DJ. A study of 1126 leukaemia cases: Epidemiologic and end result analysis. Indian J Cancer. 2016;8-17.

8. Menzes S, Malik GB. A study of leukemia in Goa. Indian J Cancer. 1979;8:28-34.

9. George JN, Harake MA, Raskob GE. Chronic idiopithic thrombocytopenic purpura. N Engl J med. 2017; 331 : 1207-1211.

10. Haldane JBS. The rate of spontaneous mutation of a human gene. J Genet. 2015; 31:317-326.