Original article

A clinico-hematological profile of hemophilia-at a tertiary care centre

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Abstract:

Introduction: Haemophilia is the most common inherited coagulation disorders, with X linked recessive inheritance, affecting the males while females are the carriers of the disease .The aim was to study the clinical and laboratory diagnosis of hemophilia.

Methods: A prospective study was carried out at the department of Pathology in a tertiary care centre for a period of two years from 2009 to 2011. Patients were evaluated on the basis of patient`s demographic data, history and parameters like age, clinical features. Blood complete picture, coagulation screening tests, bleeding time, PT, APTT, mixing studies and factor assays were documented

Observations and results : Of the 100 patients based on clinical presentation and family history, Majority (81) of the cases were categorized as Hemophilia A & 19cases were Hemophilia B. The age of onset ranged between 3 month to 48 years. All the cases were males. The predominant presenting symptom hemarthrosis followed by prolonged post traumatic bleeding. The knee joint was most commonly involved followed by ankle, elbow and shoulder joint. Factor assays showed 67% of cases with severe factor deficiency, 22% moderate and 11% with mild deficiency.

Conclusion: Bleeding after injury is obvious in healthy people but difficult to decide, when it is due to bleeding disorder. In spite of various advanced diagnostic investigations,the basic hematological investigation remains first panel or step towards the approach to the diagnosis of haemophilia.

Keywords: Hemophilia**,** Haemarthrosis,Factor assay

Introduction:

Hemophilia is a hereditary coagulation disorder, characterized by deficiency of factor VIII, factor IX and   factor XI coagulant activity.   It is the commonest congenital bleeding disorder encountered in clinical practice.[1] Haemophilia being X linked recessive disorders, affect males. Females are carriers which transmit the disease to their son while thirty percent of the patients have no family history and are a result of de novo mutations.[2-5] The incidence of Haemophilia A (Classical) is 1 per 5000 male births [6] and Haemophilia B (Christmas Disease) is 1 in 30,000[7] and estimated number of Haemophiliacs worldwide is 400,000.[8] Both the disorders (A & B) are indistinguishable clinically from each other as the signs and symptoms are same and diagnosis is

established by performing mixing studies and specific factor assay.[9] Clinically patients present with recurrent, spontaneous, and usually posttraumatic hemorrhages which may involve deep muscles, resulting in hematoma formation, hemarthrosis, and easy bruising Infants may develop excessive bleeding after circumcision.[2-5] The most affected joints in decreasing order of frequency are the knees,elbows and ankles.[10] The definition of target joint is controversial but most accepted criterion is three or more bleeds into a single joint within a consecutive three month period.[11] Replacement of the deficient factor is the mainstay of treatment however, if factor concentrates are either not available or not affordable, transfusion options including whole blood, FFP (fresh frozen plasma) Cryoprecipitate and antifibrinonlytic agents are still being used.[12] The aim of this study was to develop an approach to hemophilia with detailed clinical evaluation and laboratory diagnosis.

Material and methods

This prospective study was conducted for a period of two years from September 2009 to September 2011. The study includes all patients referred to hematology section of Pathology department of J.J.M. Medical College, Davangere and Karnataka Hemophilia Care and Hematology Research Centre with history of bleeding symptoms since birth or early childhood. The patients with platelet and vascular disorders were excluded from the study

Detailed clinical history including family history, mode of presentation, age of onset of the disease, associated symptoms and drug history were noted. Pedigree analysis was done for each case and a thorough clinical examination was performed on these patients. Then, the blood sample was collected

from all the patients by vene puncture with necessary aseptic precautions after an informed consent and subjected to battery of coagulation tests which included routine hematological tests like complete blood count using automated hematology analyzer, bleeding time (Modified Ivy's method), clotting time (Lee and White Method), clot retraction time and platelet count. Hematological parameters obtained by analyzer were HB, HCT, TLC, DLC, ESR estimation by Westergren's method, blood grouping by slide method and peripheral smear examination.These tests were followed by tests for coagulation done by coagulatometer (Diagnostic stago) namely, PT (using brain thromboplastin), APTT (using liquid cephaloplastin) and TT (using thrombin). Correction test using adsorbed plasma, aged serum, Factor VIII deficient plasma, Factor IX deficient plasma and normal pooled plasma were performed to identify circulating inhibitors and to know the factor deficiency.

Results

The study was conducted over a period of two years, during which 100 patients with hemophilia were evaluated. Out of them 81(81%) cases were diagnosed as hemophilia A while 19(19%) cases were diagnosed as hemophilia B. Age range of these patients varied from 3 months to 48 years. Majority of the cases (n = 40, 40%) were in the age group of 11-20 years followed by 28 cases (28%) in the age group of 5-10 years. In our study most common presentation was hemarthrosis followed by muscle and subcutaneous hematoma, dental bleed, post traumatic bleed, epistaxis and injection hematoma. knee joint was the predominant joint affected in 70 % cases followed by ankle joint(20%) ,elbow joint(07%)and shoulder joint(03%).

Table 1-The frequency and distribution of joint involvement in cases of hemophilia

Joint involved	Total	
	Number	Percentage
knee	70	70
Ankle	20	20
Elbow	07	07
Shoulder	03	03

The activated partial thromboplastin time was prolonged in all cases. Factor assay showed that 67 cases (67%) had severe factor VIII deficiency, 22 (22%) cases had moderate deficiency and 11(11%) case had mild deficiency

Table 2- Distribution of Factor Level and Severity of Patients with Hemophilia

Severity and factor level	Total	
	Number	Percentage
Mild	11	11
Moderate	22	22
Severe	67	67

Discussion

Bleeding tendencies caused by inherited deficiencies of one or more coagulation factors are distributed worldwide. It is possible to diagnose most of these disorders by means of battery of simple laboratory tests and correlating with clinical presentation.[13]

Hemophilia can be referred to as a disorder that causes joint damage leading to limitation in conducting daily activities and changes in social functioning. In developed countries, hemophiliacs have a quality of life very similar to that seen in general population due to the provision of safety factor concentrates and a multidisciplinary comprehensive care approach.[14]

In the present study, patients age varied from 3 months to 48 years were included. Maximum cases were between 10-20 years (40%).Males were predominantly affected in present study. The study conducted by Sajid R. et al (2010)[15], shows age group between three to 57 years and male predominance.

In Shanthala Devi A.M.et al (1999)[16] study, M:F ratio was 2:1. In our study knee joint was the predominant joint affected by hemarthrosis in 70% cases, ankle joint was involved in 20% and elbow joint was involved in 07 % and shoudler joint involvement was 03%. This correlated with the previous studies karim MA et al, Agarwal et al[17] and Alok Srivastsava[18] APTT was prolonged in all cases (100%) of hemophilia with an average of 78 sec, similar to the mean APTT value of 74 seconds reported by Horia et al.[19]The Prolonged APTT values correlated with Dube et al.[20]and Criag S. Kitchens.[21]

In our study mild haemophilia was found in 11 (11%) cases whereas moderate and severe haemophilia were found in 22(22%) and 67 (67%) cases respectively. which correlated with Alok Srivastava[18] and Shanthala Devi et al[16].

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Table-3 :Comparison Study between Factor Level and Severity in hemophilia

Severity & factor level	Alok Srivastava	Shanthala Devi et al	Present study
Mild (6.30%)	15%	12%	11
Moderate (1.5%)	15%	14%	22
Severe (<1%)	69%	74%	67

Conclusion

Hemophilia is still not a disease of public health relevance in india like other developed countries. There is very little information on the disease and its trends in our population.In this study made an effort to screen the patients with a probable diagnosis of hemophilia.Hemarthrosis was the most common symptom. The most reliable screening test for the diagnosis of hemophilia was APTT followed by correction studies and factor assay.

Lack of awareness among general public, illiteracy, poverty, poor acceptability of disability and social taboos are the factors which create "Gap" of access to diagnosis and treatment of Hemophilia. There is a need to create awareness about these disorders among general practitioners as well as families so that patients are referred early to the hemophilia centers.

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