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Original Research Paper

General Medicine

THE CLINICAL STUDY OF EVALUATION OF THE CAUSE OF THROMBOCYTOPENIA IN PATIENTS WITH FEVER

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ABSTRACT

Infection is a commonest cause of thrombocytopenia. Thrombocytopenia is associated with fever helps to narrow differential diagnosis and management of fever. Present study was conducted to evaluate the cause of thrombocytopenia patients with fever and to assess the clinical complications associated with fever and thrombocytopenia. This is a one year study from December 1st 2015 to Nov 30th 2016 of 100 patients aged >14 years with fever and thrombocytopenia, admitted in Hanagal Shri Kumareshwar Hospital and Research Centre, S. Nijalingappa Medical College, Bagalkot. Infection was the commonest cause of thrombocytopenia and dengue fever was the commonest infection. Bleeding manifestations were seen in 22% of patients of which 45% of patients had malaena as the commonest bleeding manifestation followed by skin lesions in 27%. Good recovery was noted in all patients and no mortality seen during the study period.

KEYWORDS : Infection, Dengue, Petechiae/purpura, Thrombocytopenia.

INTRODUCTION

Pyrexia and febrile response is the most ancient hallmark of disease and the most remarkable symptom of diseases to which the human kind is liable. Fever has been recognized as a cardinal manifestation of disease since the olden times, as recorded by ancient scholars like Hippocrates.[1] Seen first as a disease but later recognized as an accompaniment to a variety of disease entities, fever is an easily noted and reliable marker of illness.[2] An AM temperature of >37.2°C (98.9°F) or a P.M. temperature of >37.7°C (99.9°F) would define fever.[3]Though thrombocytopenia is encountered in various diseases, it is for sure that potentially fatal bleeding due to thrombocytopenia is rare.[4]The thrombocytopenia is defined as <150000/ul, due to impaired platelet production, accelerated platelet destruction or dilution and/or splenic sequestration.[5] Even though there is no absolute relation between platelet count and bleeding, certain broad generalizations can be made, with counts less than 10,000/µL, bleeding is usual and may be severe.[6]Thrombocytopenia is characterized by bleeding most often from small vessels. This can manifest as petechiae over the skin, hemorrhages from mucosa of gastrointestinal and genitourinary tract. Intracranial hemorrhage is a dangerous consequence in thrombocytopenia patients. Infections like dengue, leptospirosis, malaria, typhoid, viral fever, HIV, septicemia are some of the common causes of fever with thrombocytopenia. Systematic approach in patients with fever and thrombocytopenia narrows the differential diagnosis . Hence, we proceeded to know the various causes and complications of fever with thrombocytopenia and its management . Therefore the aim of the study is to analyze the clinical profile of fever with thrombocytopenia, as early diagnosis and timely intervention prevents adverse outcomes and saves life.Early diagnosis and appropriate treatment is rewarding and prevents morbidity and mortality, platelet transfusions are required to prevent fatal outcomes. This study is intended to find out the various causes of acute fever with thrombocytopenia and complications of thrombocytopenia.

OBJECTIVES

1. To evaluate the cause of thrombocytopenia in patients with fever admitted in HSK Hospital, Navanagar, Bagalkot.
2. To assess the clinical complications associated with fever and thrombocytopenia.

METHODOLOGY

Study was carried out from December 1st 2015 to Nov 30th 2016 of patients admitted with fever and thrombocytopenia in Hanagal Shri Kumareshwar Hospital and Research Centre, S.Nijalingappa Medical College, Bagalkot. We prospectively collected a series of 100 patients with fever and thrombocytopenia. In this study group criteria included are**,** patients of both the sexes aged >14yrs, patients presenting with fever i.e. am temperature of > 37.2C and pm temperature of > 37.7C and thrombocytopenia i.e. platelet count of < 1.5 lakhs. The study group criteria excluded are patients presenting with fever without thrombocytopenia,patients previously diagnosed with conditions such as ITP, platelet disorders, and patients on drugs causing thrombocytopenia.

SAMPLE SIZE

Calculation was done using Open Epi software version 2.3.1. At 95% confidence levels, design effect of 1. According to study conducted by Patil P et al the commonest cause for thrombocytopenia was Malaria is 54%=P. At 10% absolute precision, sample size calculated was 100. Statistical Analysis: Data were entered in MS Excel are tabulated in the form of tables and graphs. Percentages and proportions were used to represent the data. **Z** test was applied to proportions. P<0.05 is considered as statistically significant. Patients admitted with fever and those who had thrombocytopenia, a careful history was recorded the specific and special investigations were done as and when indicated. A final diagnosis was reached, platelet count was repeated at the time of discharge. For bleeding complications platelet transfusions was done. The causes of fever with thrombocytopenia was classified as follows; Viral causes: CMV; Dengue; Parvo-B19; HSV, HIV, Hantana etc, Bacterial causes: Gram positive and negative septicemia, miliary tuberculosis, leptospira, typhoid etc, Protozoal – Malaria,Others – Leukaemia, lymphoma etc.

RESULTS

A total number of 100 patients admitted over a period of one year in our hospital were studied.Study subjects included both the sexes above the age group of 15yrs. 59 were males and 41 were females. The duration of hospitalization varied between 1 day to 19 days. The average duration of hospitalization was 5 days. Out of 100 patients with fever and thrombocytopenia,dengue (36%) emerged as the commonest cause, followed by malaria (11%), enteric fever (10%), septicemia (9%), urinary tract infection (8%), ricketssial fever (4%), leptospirosis (2%), meningitis (2%), chikungunya (1%), 3 patients had mixed infections with both dengue and vivax malaria and one patient with dengue had urinary tract infection. 13% of the patients were diagnosed to have non specific viral fever.In patients with malaria, vivax malaria (79%) was commonest followed by falciparum malaria (21%).In our study 35% of the patients had platelet count in the range of 50,001 – 1,00,000 followed by 28% in the range of 20001-50000 and 23% of the patients had platelet count less than 20,000 on admission and platelet count more than 100000 was seen in 14%patients more than 100000. 22% of the patients had clinical manifestations of thrombocytopenia.Out of 22

patients, 10 patients had malaena, 5 patients had purpuric rash, 2 of them had gum bleeding, 2 patients had hematuria and 2 patients had nasal bleed and one patient had petechiae.All 100 patients who were admitted had good clinical recovery with zero mortality during hospital stay.

1. Distribution on the basis of AGE, SEX , BLEEDING MANIFESTATIONS, PLATELETS OF PATIENTS AT ADMISSION & DISCHARGE.

Among 100 cases 59 were males and 41 were females were divided into 4 age groups, 23 in the age group of <20 years, 50 in age group of 21-40 years, 19 in age group of 41-60 years, 8 in age group of >60years. Out of 100 cases of febrile thrombocytopenia, 22% patient had signs of bleeding manifestation and the rest (78%) did not have any bleeding manifestations.

AGE	FREQUENCY	PERCENT
<20	23	23.0
21-40	50	50.0
41-60	19	19.0
>60	8	8.0
• TOTAL	100	100.0
SEX		
FEMALE	41	41.0
MALE	59	59.0
TOTAL	100	100.0
BLEEDING		
ABSENT	78	78.0
PRESENT	22	22.0
TOTAL	100	100.0
PLATELET COUNT AT ADMISSION		
<20000	23	23.0
20001-50000	28	28.0
50001-100000	35	35.0
>100000	14	14.0
TOTAL	100	100.0
PLATELET COUNT AT DISCHARGE		
<20000	7	7.0
20001-50000	8	8.0
50001-100000	26	26.0
>100000	59	59.0
TOTAL	100	100.0

2. Duration of hospital stay:

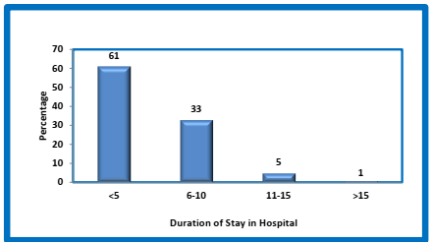

Fig 1: Duration of hospital stay in the hospital

3. Etiological Distribution:

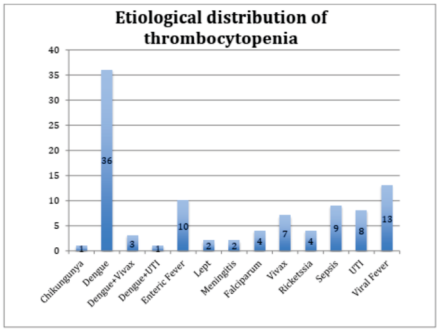

Fig 2: Showing Etiology of thrombocytopenia in our study

4. Distribution according to Etiology and Bleeding Tendency:

Out of the 36 cases of dengue, 14(39%) had bleeding manifestations. Out of the 10 cases of enteric fever 3(33.33%) had bleeding manifestations. Out of the 9 cases of septicemia 3(33%) and 1 each of Ricketssial and chikungunya had bleeding manifestations.

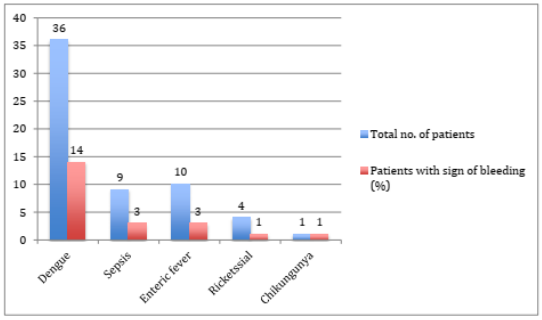

Fig 3: Graph showing distribution according to Etiology and Bleeding Tendency

5. Clinical profile of Platelet Count, bleeding manifestation and various etiologies:

Table 4: Table showing correlation between platelet Count, bleeding manifestation and etiology.

Total cases (22) Of bleeding manifestations	<10000/uL	10001-20000uL	200001-30000uL
DENGUE(14)	6	6	2
SEPTICEMIA(3)	1	2	0
ENTERIC FEVER(3)	0	2	1
RICKETSSIAL FEVER(1)	0	1	0
CHIKUNGUNYA(1)	0	0	1

DISCUSSION

One hundred patients of fever with thrombocytopenia satisfying the inclusion criteria were studied and follow up was recorded. Dengue with 36 cases was leading cause of fever associated with thrombocytopenia. Second common cause was malaria with 11 cases followed by enteric fever 10 cases; septicemia 9 cases and 13 cases were categorized under non-specific viral fever. This might be due to seasonal, regional variations and other multi-factorial etiologies. A study conducted by Nair PS, et al at New Delhi, for period of one and half years, a total of 109 cases (76 males, 33 females) were studied with the same criteria as in our study.[10] In another study conducted by Srinivas et al [11] malaria with 41 cases was the leading cause of fever associated with thrombocytopenia. Second common cause was enteric fever followed by septicaemia, dengue, leptospirosis with 24, 19, 2 cases respectively. In a study conducted by Patil P et al [14] , the commonest cause of febrile thrombocytopenia was Malaria 54% followed by Viral fever 17%, Dengue 15%, enteric 6% and septicemia 4%.In a study done by Gandhi A A et al[15], the most common etiology responsible in adult patients was found to be Dengue fever (26.79%), similar to the results in our study.

Table 5. Comparison of our study with Nair study and Srinivas study with respect to disease category.

Disease category	Nair study – No. of cases with percentage	Srinivas study – No. of cases with percentage	Our study – No. of cases with percentage
Malaria	10 cases (9.2%)	41 cases (41%)	11 cases (11%)
Enteric fever	16 cases (14.7%)	24 cases (24%)	10 cases (10%)
Dengue fever	15 cases (13.8%)	14 cases (14%)	36 cases (36%)
Sepsis	29 cases (26.6%)	19 cases (19%)	9 cases (9%)
Haematological condition	17 cases (15.6%)	0 cases (0%)	0 cases (0%)
Others	20 cases (18.3%)	2 cases (2%)	34 cases (34%)

Among infections dengue fever has been found out to be the commonest cause in 36% as against sepsis 27% in Nair et al study[33] and malaria 41% in Srinivas et al study[34]. This again may be due to seasonal and regional variation .Out of 109 cases in Nair et al[10] study, 62 cases (56.8%) had platelet count between 50000 to 100000, 28 cases (25.7%) had counts between 20000 and 50000.In our study 35% cases had platelets in the range of 50000 to 100000 and platelet counts in the range of 20000 to 50000 were in 28% and in Nair study it was 25.7%.Out of 109 patients 45 had signs of thromocytopenia in Nair et al[10] study, accounting for 41.3%. Out of 45 cases, spontaneous bleeding was seen in 31 cases accounting for 69% bleeding manifestations.[10] Thrombocytopenia is common finding in malaria and about 80% of malaria patients have the same.[12,13] In a study conducted by UM Jadav et al, "thrombocytopenia in malaria – correlation with type and severity of malaria". Normal platelet count was noted in 21.6% cases (n=1565). In a study conducted by Patil P et al [14] , during the course of follow up platelets showed increasing trends in 61% patients and continuously decreasing trends in 39% patients while in the study by Srinivas et al [11] the follow up platelets showed increasing trends in 63.3% patients and continuously decreasing trend was seen in 36.7% patients.In our study bleeding manifestations were seen in 22 cases(22%) with skin lesions in 6 cases (27%) and spontaneous bleeding in 16 cases (73%). In Nair study, spontaneous bleeding was seen in 78% while skin lesions in 22%. In Srinivas study, petechiae /purpura was the commonest bleeding manifestation with 31 cases (63%) followed by spontaneous bleeding accounting for 18 cases (37%).

CONCLUSION

Fever with thrombocytopenia is one of the most challenging problems in the field of medicine. Infection is the commonest cause of fever with thrombocytopenia. Among infection, dengue fever is the most common cause followed by malaria and enteric fever. In majority of patients thrombocytopenia was transient and asymptomatic. In significant number of cases thrombocytopenia lead to various bleeding manifestations and influenced the clinical profile of these febrile illness. Generally, spontaneous bleeding was noted in platelet count <20,000 but in some due to qualitative defects it was seen in platelet count in the range of 40,000 cell cu/mm also. Some patients with platelet count of 10,000 did not have spontaneous bleeding. Spontaneous bleeding patients should be evaluated for disseminated intravascular coagulation also. Platelet count rise rapidly with supportive treatment of dengue infection, so need of platelet transfusion in these cases vary with patients to patients.

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