Research Paper

Medical sciences

A STUDY OF CO-RELATION BETWEEN BLEEDING MANIFESTATION AND PLATELET COUNTS IN PATIENTS WITH FEBRILE THROMBOCYTOPENIA

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ABSTRACT

Fever is a common complaint encountered in clinical practice. Infection is the commonest cause of fever .Infection is a commonest cause of thrombocytopenia. Thrombocytopenia associated with fever helps to narrow differential diagnosis and management of fever. It helps to know the various complications of thrombocytopenia and its management. We report a case series of 50 patients of fever with thrombocytopenia evaluated with necessary lab investigations, managed appropriately and bleeding complications noted. Here we attempted to correlate the level of platelet count to bleeding.

KEYWORDS

Fever, thrombocytopenia, bleeding manifestations, malaria, enteric fever, dengue.

INTRODUCTION:

Fever is a paervasive and ubiquitous theme in human myth, art and science, Febrile thrombocytopenia is the thrombocytopeniaassociated with fever. Diseases which commonlypresent with fever and thrombocytopenia are malaria,leptospirosis, rickettsial infections, septicemia,typhoid, borreliosis, arbovirus such as dengue oryellow fever, rodent-borne viruses such as Hanta andLassa fever, human immunodeficiency virus (HIV),visceralleishmaniasis and TTP-HUS.1,7 The study wasintended the variouspresentations and relationship between platelet leveland severity of disease and prognosis.

This clinical study includes 50 patients with low platelet count,which aims to show correlation between platelet count and bleeding manifestations in dengue(bleeding manifestations like petechiae,bleeding gums,hematuria, subconjunctival hemorrhages are reported). Spontaneous bleeding normally occurs in patients with platelet count <20000,but cannot be ruled out in patients with higher counts. Bleeding during dengue hemorrhagic fever may result from a combination of factors such as thrombocytopenia, coagulation defects and vasculopathy.

AIM OF THE STUDY

The present work was undertaken to study the correlation of the bleeding with thrombocytopenia in patients of fever and to highlight in the pathology of bleeding manifestations.

OBJECTIVES:

To establish pathophysiology of bleeding in patients with fever with thrombocytopenia.

To correlate the bleeding with low platelet counts in fever with thrombocytopenia.
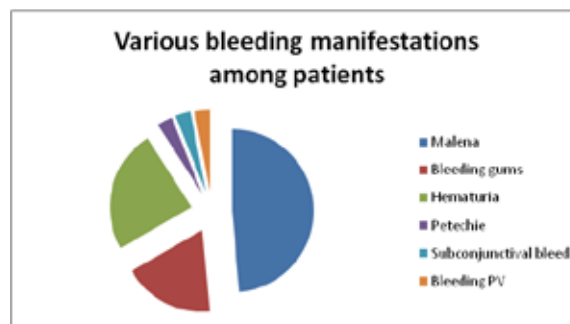
MATERIALS AND METHODS

Fifty patients who were admitted to the government general hospital with complaints of fever of high grade with chills and rigors wereincludedin the study. Investigative workup was carried in patients to note the etiology of fever and to assess the clinical state. In patients with thrombocytopenia a careful history was recorded, specific and special investigations were done as and when indicated.

Case Study:

In our study between October 2014 to December 2014, a total of 50 the patients with fever with thrombocytopenia were admitted to Government general hospital,of which 34 are males, 16 are females with ratio of 2:1. Irrespective of age group cases admitted in medical wards are taken into study excluding pregnant and children<12 years. Out of 50 patients in our study,16 patients had malena, 6 presented with bleeding gums,8 patients with hematuria, 1 patient with petechiae and 1 with subconjunctival bleed,1 patient with bleeding per vagina and remaining patients with no bleeding manifesatations. Some patients had two or more manifestations. The study showed in one case by name Prasanna with low platelet count 4000 had no bleeding manifestations and 1 patient with 79000 platelet has bleeding manifestation in the form of malena indicating the possible immuno pathogenic mechanism causing bleeding other than thrombocytopenia. Cases with platelet count less than 10000 mostly showed bleeding gums and majority of the cases presented with malena.

In our study we came across different patterns of bleeding and no specific cut off platelet count can be marked for bleeding. We experienced patients with bleeding with platelet counts as high as 75000 and as low as 2000. Also patients with low counts like 4000 also have not showed bleeding manifestations. The platelet counts pattern in our patients is as follows.

Platelet count	Bleeding manifestations present	No bleeding manifestations
<20000/cu.mm	23	4
20-50000/cu.mm	8	7
>50000/cu.mm	2	6

Various bleeding manifestations among patients

- Malena
- Bleeding gums
- Hematuria
- Petechie
- Subconjunctival bleed
- Bleeding PV

Discussion

Febrile thrombocytopenia is a common clinicalcondition and is caused by infectious and

Noninfectious etiology,compartment. Thrombocytopenia may be defined as a subnormalnumber of platelets in the circulating blood.A normal human platelet count ranges from1,50,000 to 4,50,000 platelets/μL of blood. Oftenpatients with thrombocytopenia are asymptomaticand are diagnosed by routine complete blood count.Occasionally, there may be bruising, purpura,petechiae, nose bleeding and gum bleeding. Rarely,platelet count may be as low as 5,000/mm3 predisposingthe patients to life-threatening bleeding in the centralnervous system (CNS) or from the gastrointestinal andgenitourinary tracts.

Cytokines that may induce plasma leakage such as interferon g, interleukin (IL) 2, and tumour necrosis factor (TNF) α are increased in DHF cases .Also, interferon γ enhances uptake of dengue particles by target cells through increasing Fc cell receptors. Other cytokines such as IL-6, IL-8, and IL-10 are also increased.

Malaria was the commonest cause accounting 48%, which was followed by septicemia (6%), denguefever (8%), Enteric Fever (8%), Undetermined febrile illness (29%) HIV (1%) in malaria is probably dueto increased splenic sequestration, immune-mediateddestruction, and a shortened platelet survival and consumption by DIC. Along with quantitative defects,qualitative defects have also been documented, whichare platelet hyperactivity, due to aggregating agentlike immune complexes and damage of endothelialcells followed by platelet hypoactivity, which returnsto normal in 1-2 weeks. Thrombocytopenia along withacute febrile syndrome is having 100% sensitivity,70% specificity, 100% negative predictive value and86% positive predictive value in malarial diagnosis.

Thrombocytopenia is the very common finding insepticemia and is an independent prognostic marker.In a study conducted by Lee et al on 53 patientswith septicemia thrombocytopenia was observed in57% patients and DIC in 35% patients. The etiologyof thrombocytopenia in sepsis is multifactorial.It is commonly associated with DIC and is caused bysplenic destruction of immune complex coated platelets,platelet adherence to damaged vascular surfaces andby direct platelet toxicity caused by microorganisms.7It is also probably related to impaired productionof platelets from within the bone marrow, activephagocytosis of megakaryocytes and otherhematopoietic cells by monocytes and macrophageshypothetically due to stimulation with high levelsof macrophage colony-stimulating factor (M-CSF)in sepsis and platelet consumption due to on-goinggeneration of thrombin.

Dengue is the most commonarbovirus disease worldwide and occurs in tropicalcountries. Thrombocytopenia is an important findingand has got predictive as well recovery parameter ofdengue fever/dengue hemorrhagic fever/dengue shocksyndrome (DF/DHF/DSS). Thrombocytopenia in DF iscaused by bone marrow suppression (i.e., decreasedplatelet synthesis and increased immune-mediateddestruction of platelets).

Cause of fever with thrombocytopenia	Percentage
Malaria	48%
Dengue Fever	8%
Enteric fever	8%
Undetermined febrile illness	29%
Septicaemia	6%
HIV	1%

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 infections malaria was the commonest cause. This was followed by undetermined febrile illness. The exact cut off for bleeding cannot be precisely fixed. In case of viral it depends on a multitude of factors like the patient factors, virulence of virus, reinfection with different serotypes, underlying risk factors in patients. There are no clear clinical studies stating the same. According to our study the risk of bleeding tends to be more with platelet counts <20000/ cu.mm and less in patients with platelets >50000/cu.mm.

Some patients with platelet counts >20000/cu.mm showed spontaneous bleed, poses a challenge that at what level of platelet count prophylactic therapy should be started and it also signifies underlying mechanisms other than thrombocytopenia which needs to be investigated by further studies.

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