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Assessment of the clinical profile & causes associated with the fever

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Abstract
A fever can be caused by many medical conditions ranging from non-serious to life threatening. This includes viral, bacterial and parasitic infections such as the common cold, urinary tract infections, meningitis, malaria and appendicitis among others. Non-infectious causes include vasculitis, deep vein thrombosis, side effects of medication, and cancer among others. The aim the present study was to find out the clinical profile, cause and complications associated with the patients admitted with the fever.

The study has planned in Department of General medicine, VMMC & Safdarjung Hospital, New Delhi. The 50 patients detected with malaria were enrolled in to the study. The age group of the patients are below 10 years. The patients visited to Out Patient Department (OPD) and in-patient department (IPD) of a tertiary care hospital in North India were considered in the study. All the patients are informed consents. The entire patient's clinical history was collected.

From the above data generated it can be concluded that the fever with thrombocytopenia reveals among infections dengue and malaria are common causes because of seasonaland regional variations.

Keywords: severe malaria, falciparum, mixed, vivax

Introduction

A fever is a body temperature that is higher than normal. A normal temperature can vary from person to person, but it is usually around 98.6 F. A fever is not a disease. It is usually a sign that your body is trying to fight an illness or infection. Infections cause most fevers. You get a fever because your body is trying to kill the virus or bacteria that caused the infection. Most of those bacteria and viruses do well when your body is at your normal temperature. But if you have a fever, it is harder for them to survive. Fever also activates your body's immune system

Fever, also known as pyrexia and febrile response, is defined as having a temperature above the normal range due to an increase in the body's temperature set point. There is not a single agreed-upon upper limit for normal temperature with sources using values between 37.5 and 38.3 °C (99.5 and 100.9 °F). The increase in set point triggers increased muscle contractions and causes a feeling of cold. This results in greater heat production and efforts to conserve heat. When the set point temperature returns to normal, a person feels hot, becomes flushed, and may begin to sweat. Rarely a fever may trigger a febrile seizure [3]. This is more common in young children. Fevers do not typically go higher than 41 to 42 °C (105.8 to 107.6 °F) [1].

A fever can be caused by many medical conditions ranging from non-serious to life threatening. This includes viral, bacterial and parasitic infections such as the common cold, urinary tract infections, meningitis, malaria and appendicitis among others. Non-infectious causes include vasculitis, deep vein thrombosis, side effects of medication, and cancer among others. It differs from hyperthermia, in that hyperthermia is an increase in body temperature over the temperature set point, due to either too much heat production or not enough heat loss [2].

Treatment to reduce fever is generally not required. Treatment of associated pain and inflammation, however, may be useful and help a person rest. Medications such as ibuprofen or paracetamol (acetaminophen) may help with this as well as lower temperature. Measures such as putting a cool damp cloth on the forehead and having a slightly warm bath are not useful and may simply make a person more uncomfortable. Children younger than three months require medical attention, as might people with serious medical problems such as a compromised immune system or people with other symptoms. Hyperthermia does require treatment. Fever is one of the most common medical signs. It is part of about 30% of healthcare visits by children and occurs in up to 75% of adults who are seriously sick. While fever is a useful defense mechanism, treating fever does not appear to worsen outcomes. Fever is viewed with greater concern by parents and healthcare professionals than it usually deserves, a phenomenon known as fever phobia [3].

Different fever patterns observed in Plasmodium infections. The pattern of temperature changes may occasionally hint at the diagnosis:

- **Continuous fever:** Temperature remains above normal throughout the day and does not fluctuate more than 1 °C in 24 hours, e.g. lobar pneumonia, typhoid, meningitis, urinary tract infection, or typhus. Typhoid fever may show a specific fever pattern (Wunderlich curve of typhoid fever), with a slow stepwise increase and a high plateau. (Drops due to fever-reducing drugs are excluded.)

- **Intermittent fever:** The temperature elevation is present only for a certain period, later cycling back to normal, e.g. malaria, kala-azar, pyaemia, or septicemia. Following are its types [4]:
  - Quotidian fever, with a periodicity of 24 hours, typical of Plasmodium knowlesi malaria
  - Tertian fever (48-hour periodicity), typical of later in the course of Plasmodium falciparum, Plasmodium vivax, or Plasmodium ovale malaria
  - Quartan fever (72-hour periodicity), typical of later in the course of Plasmodium malariae malaria [5].
- **Remittent fever:** Temperature remains above normal throughout the day and fluctuates more than 1 °C in 24 hours, e.g., infective endocarditis, brucellosis.
- **Pel-Ebstein fever:** A specific kind of fever associated with Hodgkin's lymphoma, being high for one week and low for the next week and so on. However, there is some debate as to whether this pattern truly exists [6].
- A neutropenic fever, also called febrile neutropenia, is a fever in the absence of normal immune system function. Because of the lack of infection-fighting neutrophils, a bacterial infection can spread rapidly; this fever is, therefore, usually considered to require urgent medical attention. This kind of fever is more commonly seen in people receiving immune-suppressing chemotherapy than in apparently healthy people.

The aim the present study was to find out the clinical profile, cause and complications associated with the patients admitted with the fever.

Materials & Methodology

The study has planned in Department of General medicine, VMMC & Safdarjung Hospital, New Delhi. The 50 patients detected with malaria were enrolled in to the study. The age group of the patients are below 10 years. The patients visited to Out Patient Department (OPD) and in-patient department (IPD) of a tertiary care hospital in North India were considered in the study. All the patients are informed consents. The entire patient's clinical history was collected.
The inclusion and exclusion criteria for the study were as follow:

Inclusion Criteria

- Patients admitted with fever.
- Patients above 15 years of age
- Both males and females

Exclusion Criteria

- Patients below 15 years of age

Results & Discussion

The data from the 50 patients were collected and discussed as follows.

Table 1: Gender distribution of cases

Disease	Female	Male	Total
Plasmodium falcifarum	6	8	14
Plasmodium vivax	3	5	8
mixed	3	4	7
Dengue	5	7	12
Enteric fever	3	6	9
Total	20	30	50

Table 2: Age distribution of malarial cases

Age group	Female	Male	Total
15-25 years	8	11	19
26-35 years	6	7	13
36-45 years	4	8	12
46 years &above	2	4	6
Total	20	30	50

Table 3: Clinical Symptoms

Clinical Symptoms	No. of Cases
Impaired consciousness	8
Prostration	6
Multiple convulsions	3
Respiratory distress	5
Circulatory collapse	6
Clinical jaundice	2
Spontaneous bleeding	3
Normocytic anemia	5
Hemoglobinuria	4
Renal impairment	3
Hypoglycemia	2
Metabolic Acidosis	3
Total	50

Table 4: Platelet Count

Disease	Platelet Count
Plasmodium falcifarum	14,000-24,000
Plasmodium vivax	19,000-27,000
mixed	22,000-50,000
Dengue	11,000-13,000
Enteric fever	52,000-93,000

Thrombocytopenia is raising problem in tropical countries. Thrombocytopenia may be defined as a subnormal number of platelets in the circulating blood. A normal human platelet count ranges from 1,50,000 /mm3 to 4,50,000 platelets/mm3 of blood. Both infectious and non-infectious diseases cause thrombocytopenia. The diseases that cause thrombocytopenia in younger population commonly are infections (i.e. dengue, malaria, enteric fever, HIV, DIC) and megaloblastic anaemia. In this study, the most common aetiology responsible for newly diagnosed thrombocytopenia in adult patients was found to be Dengue fever. The two mechanisms probably involved in dengue-induced thrombocytopenia are impaired thrombopoiesis and peripheral platelet destruction [7].
Both non-immunological destruction and immune mechanism involving specific platelet-associated IgG antibodies that bind directly to malarial antigen in the platelets have been reported to play a role in the lysis of platelets [8].
In Patients with leukemia particularly in acute leukemia, patients have petechiae, ecchymosis and nose bleeding associated with thrombocytopenia because of bone marrow infiltration [9].
Dengue and malaria were the common causes due to the higher prevalence of these infections during the rainy season, which may be the reason for variation between different studies.
Since this was a retrospective study with small sample size, we could not demonstrate any cyclical changes in clinical profile of severe malaria over a period of four years. There is a need of prospective study with bigger sample size to find out any changing trend over years.

Conclusion

From the above data generated it can be concluded that the fever with thrombocytopenia reveals among infections dengue and malaria are common causes because of seasonaland regional variations.

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