INTRODUCTION

Malaria is caused by unicellular, protozoan parasites belonging to the genus Plasmodium. Until recently 5 Plasmodium species were considered infectious to humans; P.falciparum, P.vivax, P.ovale, P.malariae and P.knowlesi. Malaria usually manifest as either uncomplicated (most common) or severe form. The global annual incidence of severe malaria can be estimated to be 2 million cases.(3,5). Severe malaria is a medical emergency mainly caused by falciparum and other Plasmodium manifestation being altered renal function, altered liver function severe anaemia, metabolic acidosis, ARDS, cerebral malaria. Mortality is more common with falciparum infection and most common cause being ARDS, other causes of death is renal failure, hepatic failure and hypotension. Early diagnosis, anticipation of complication, close monitoring of vital parameters and combination therapy to overcome drug resistant perhaps helped to curtail the extent of mortality in severe malaria.

OBJECTIVES

To study the clinical presentation of severe malaria regarding age, sex, causative agent, clinical manifestation, risk factors, mortality and morbidity and to compare the clinical manifestation of severe malaria in patients infected with P.falciparum, P.vivax, and mixed infection.

MATERIALS AND METHODS:

This study was carried out on 60 patients diagnosed with severe malaria based on the national vector born disease control program (NVBDCP).

Result:

Most common cause of severe malaria is P.falciparum. Severe malaria mainly affects young individuals in the age of 20-40years and predominantly male. Fever is the most common presenting symptom. Most common manifestation of severe malaria is thrombocytopenia mainly caused by falciparum and other Plasmodium manifestation being altered renal function, altered liver function severe anaemia, metabolic acidosis, ARDS, cerebral malaria. Mortality is more common with falciparum infection and most common cause being ARDS, other causes of death is renal failure, hepatic failure and hypotension. Early diagnosis, anticipation of complication, close monitoring of vital parameters and combination therapy to overcome drug resistant perhaps helped to curtail the extent of mortality in severe malaria.

Conclusion:

Of the 60-patient studied we came to conclusion that severe malaria is caused more commonly by falciparum mainly involving young male during rainy season with renal failure and metabolic acidosis as the most common manifestation of severe malaria. With high mortality rate for patients developing ARDS and favourable outcome for patients initiating early treatment.

KEYWORDS

Severe Anaemia, DIC, Acidosis, Hypoglycemia, Hyperparasitemia, Severe Malaria, ARDS, Anuria, Jaundice, Hypotension, Abdominal distention.
GENDER DISTRIBUTION

Of the 60 patients affected with severe malaria, 43 were male and 17 were females. Severe malaria has a higher prevalence in male, it might be because males are at higher risk of exposure to mosquito bite due to outdoor jobs, regular travel to endemic area, migrant labourer etc…

SEASONAL DISTRIBUTION

Number of admissions increased towards June(8 admissions) and July(5) and maximum admissions were during August and September(14 each). This study suggest that the transmission of severe malaria is more during and after rainy season because of the availability of stagnant water favouring breeding of anopheles mosquitos

REGIONAL DISTRIBUTION

<table>
<thead>
<tr>
<th>Region of case reported</th>
<th>No: cases reported</th>
</tr>
</thead>
<tbody>
<tr>
<td>Talaja</td>
<td>13(22%)</td>
</tr>
<tr>
<td>Mahuva</td>
<td>9(16%)</td>
</tr>
<tr>
<td>Palitana</td>
<td>6(10%)</td>
</tr>
<tr>
<td>Gariadhar</td>
<td>10(17%)</td>
</tr>
<tr>
<td>Umrala</td>
<td>3(4%)</td>
</tr>
<tr>
<td>Sihor</td>
<td>8(14%)</td>
</tr>
<tr>
<td>Valbipur</td>
<td>4(5%)</td>
</tr>
<tr>
<td>Jesar</td>
<td>0</td>
</tr>
<tr>
<td>Other (outside Bhavnagar)</td>
<td>7(12%)</td>
</tr>
</tbody>
</table>

PLASMODIUM SPECIES CAUSING SEVERE MALARIA

<table>
<thead>
<tr>
<th>Plasmodium Species</th>
<th>Cases (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plasmodium vivax</td>
<td>24(40%)</td>
</tr>
<tr>
<td>Plasmodium falciparum</td>
<td>32(54%)</td>
</tr>
</tbody>
</table>

SYMPTOM WISE DISTRIBUTION

Symptoms analysis on admission shows that all cases (100%) had fever on presentation. Duration ranging from 1 to 20 days with a mean duration of 6.68±4.24 days. 48(80%) patients presented within 1 week of fever onset. Fever was followed by impaired consciousness in 10 patients (16%).

SIGNS WISE DISTRIBUTION

GENERAL PHYSICAL SIGNS ON ADMISSION

All patients(60) were febrile, pallor was present in 40(66%), icterus in 7(28%), hypotension in 12(20%). Hepatomegaly was observed in 23(38%), splenomegaly 24(38%) ,hepatosplenomegaly 23(38%), respiratory crackles in 10(16%)

BIOCHEMICAL PROFILE

On blood investigations mean Hb level is 9.34±2.7gm/dl, severe anaemia (Hb<5mg/dl) observed in 8 patients, leucocytosis was observed in 2 patients, while leucopenia was present in 16, thrombocytopenia was present in 45 patients, abnormal bilirubin level was found in 28, altered liver enzymes (SGOT and SGPT) was raised in 18 patients, abnormal renal function was observed in 30 patients.

DIFFERENT MANIFESTATION OF SEVERE MALARIA

Altered Sensorium was observed in 10 patients falciparum (8) and
vivax (2). Hypotension systolic<80mmHg(8 patients) was equally prevalent in vivax (4) and falciparum (4). Metabolic acidosis(18 patients) was more frequent in falciparum 10 cases (50%) than in vivax 7 and mixed(60%) cases.Hyperbilirubinemia (24 patients) was higher in falciparum 14 case than vivax 8 and mixed had 2. The mean bilirubin in the falciparum infection was 13.19±2.90mg/dl and vivax was 6.80±4.49.Acute renal failure(Creatinine >3mg/dl) was significantly more common in falciparum 12 cases, vivax 4cases and mixed infection 2 cases. Falciparum infected 2 vivax infected required dialysis. ARDS was seen in 10 patients of which 6 falciparum, 2 vivax, 2 mixed respectively.

MORTALITY DUE TO SEVERE MALARIA

Of the 60 patients studied, 10 patients expired during the hospital stay. Mortality rate was 16% 8 were falciparum positive and 2 vivax positive. Most patients developed multiple fatal manifestation together. 5 developed ARDS and was put on ventilator support. Out of the deaths due to ARDS 1 was vivax, 1 mixed and 3 falciparum positive. 2 other patients who expired also developed severe renal failure and was put on dialysis. 5 patients developed liver failure (altered LFT)

SUMMARY

60 patients with severe malaria (NVBDCP guideline) admitted to Sir T Hospital from August 2018 to July 2019 were studied. The mean age of the patients 36.6. Maximum number of patients 24(40%) were in the age group of 21-30. Male gender 43(72%) were more affected with severe malaria than females 17(28%). August and September where the months of maximum hospital admissions (46%) due to severe malaria. Out of 60 patients 32(54%) subjects were falciparum positive. Fever is the most common presenting symptom (100%). Mean duration of fever was 6.68±4.28SD. In presenting signs, pyrexia was present in all patients. Pallor and hepatosplenomegaly were common findings. Thrombocytopenia was the most common biochemical abnormality seen in 75% of the patients and was equally caused by falciparum and vivax (44% each). Altered liver function was found in 46% patients. Renal derangement was found in 50% of patient in the form of raised creatinine. Anaemia was present in 58% of patients of which 13% developed severe anaemia. Common severe manifestations were jaundice(40%), metabolic acidosis(33%), Renal failure (30%) and ARDS(16%) had higher mortality associated with it. Impaired consciousness and severe anaemia were found in 13% of cases. Total mortality due to severe malaria was (16%). Mortality due to severe malaria was commonly due to plasmodium falciparum(80%), and the most common manifestations in expired patients were ARDS(50%), hypotension(60%) and Hepatic failure(50%). Other causes of death are renal failure (20%), metabolic acidosis(30%) severe anaemia(30%). Early diagnosis, anticipation of complication, close monitoring of vital parameters and artesunate combination therapy to overcome drug resistant perhaps helped to curtail the extent of mortality in severe malaria

REFERENCES

1. Malaria Journal 2009; 8:281