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Severe Plasmodium Falciparum Malaria and Severe Plasmodium Vivax Malaria Treatment in India

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Abstract

BACKGROUND: The treatment of severe P. falciparum Malaria and severe P. vivax Malaria is identical. Their treatment in India is complex because different regimes exist for the North-eastern part of the country and for the rest of the country. Also, different drugs are needed for the treatment of pregnant patients.

OBJECTIVES: To find out what are the antimalarials prescribed in India for treating severe Falciparum Malaria and severe Vivax Malaria.

METHODS: By reviewing documents prepared by NVBDCP.

RESULTS: It is found that different regimes exist for treating severe Falciparum Malaria and severe Vivax Malaria depending on where the patient comes from, and the drugs differ based on the pregnancy status of the female patient.

CONCLUSIONS: More education is required among health care providers on how to treat severe P. falciparum Malaria and severe P. vivax Malaria. This paper addresses this concern.

KEYWORDS: Malaria; Plasmozzdium falciparum; Plasmodium vivax.

INTRODUCTION

Treatment of severe P. falciparumMalaria and severe P. vivax Malaria consists of an initial parenteral phase and a follow-up oral phase. While the parenteral phase is the same irrespective of where the patient lives, the oral phase, consisting ofgiving Artemisinin-based Combination Therapy (ACT) and Primaquine, differs based on the place of residence. If the patient resides in any part of the country except the North-East, he/she is treated with an ACT consisting of three days treatment with Artesunate and one-day treatment with Sulphadoxine-Pyrimethamine (SP). If the patient lives in the North-East, he/she is treated with Artemether and Lumefantrine for three days.[1]

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MATERIAL AND METHODS

The study design included analysis of the documents of the NVBDCP pertaining to treating severe P. falciparum Malaria.

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RESULTS

The country's Drug Policy on Malaria 2013 for severeP. falciparumMalaria:[2]

A. Table Showing the Three Available Initial Parenteral Regimes (to be given for at least 48 hours even if the patient can tolerate oral medication earlier than this)

Drug (for at least 48 hours)	Dosage
Inj. Artesunate	2.4 milligrams/kilogram body wt. IV or IM at diagnosis (0 hrs). Next at 12 hrs, then 24 hrs, After that, once a day.
Inj. Artemether	3.2 milligrams /kilogram body wt. IM at diagnosis. After that, 1.6 milligrams/kilogram body wt. daily.
Inj. Arteether	150 mg IM daily for three days (for adults only; not for children)

B. Follow-up Oral Regimes (at the time the patient can take oral medication):

Treatment in those States other than the North-Eastern States:

Here, the ACT used consists of the following drugs in the given dosages:

- Artesunate: 4mg/kg body wt. daily for three days PLUS
- SP consisting of 25 milligrams per kilogram body wt. Sulfadoxine plus 1.25 milligrams per kilogram body wt. Pyrimethamine on Day One.

In addition, 0.75 milligrams per kilogram body wt. Primaquine is given on the second day. The function of Primaquine is to kill the gametocytes.

Note:

(i) SP not to be prescribed for children under the age of 5 months. In such cases, they should be given an ACT not containing SP.

(ii) The above ACT should not be given during the first trimester of pregnancy. Instead, in the first trimester, Quinine salt is to be given at 10 mg per kg body wt. TDS for one week. During the second and third trimesters, the above ACT can be given. However, Primaquine is not to be given in any trimester.

Treatment in the North-Eastern States:

Here, the ACT used consists of the following drugs in the given dosages:

Artemether-Lumefantrine prescribed as per body weight:

5 kilograms to 14 kilograms	20 mg Artemether plus Lumefantrine 120 mg BD X 3 days
15 kilograms to 24 kilograms	40 mg Artemether plus Lumefantrine 240 mg BD X 3 days
25 kilograms to 34 kilograms	60 mg Artemether plus Lumefantrine 360 mg BD X 3 days
35 kilograms & above	80 mg Artemether plus Lumefantrine 480 mg BD X 3 days

In addition, Primaquine is given at a dose of 0.75 milligrams per kg body wt. on the Second day.

Note:

(i) Artemether-Lumefantrine is not to be given to children weighing less than 5 kilograms.

(ii) The above ACT should not be given during the first trimester of pregnancy. Instead, in the first trimester, Quinine salt is to be given at 10 mg per kg body wt. TDS for one week. During the second and third trimesters, the above ACT can be given. However, Primaquine is not to be given in any trimester.

QUININE REGIME

This consists of an Initial Parenteral Phase of 20 mg Inj. Quinine salt/kilogram body wt. IV infusion or IM to be given at diagnosis followed by a maintenance dose of 10 milligrams/kilogram body wt. TDS.

Note:

(a) Infusion rate should not exceed 5 milligrams/kg body wt. per hour.

(b) If the patient received Quinine earlier, then the Loading dose of 20 milligrams/kg body wt. should not be given.

The Follow-up Oral Phase is given when the patient can take oral medication. It consists of:

Tab Quinine 10 milligrams/kg body wt. TDS till seven days of Quinine therapy (including parenteral Quinine therapy) is completed AND Cap Doxycycline 3 milligrams/kg body weight once a day for one week.

For Pregnant Women and Children under the Age of Eight Years: Instead of Doxycycline:

Cap or Syrup Clindamycin 10 milligrams/kilogram body weight TDS for one week.[3]

The diagnosis and treatment of Malaria guidelines (2014) covered treatingsevere P. falciparum Malaria in the same way as was done by the National Drug Policy on Malaria 2013 given above. An additional point made in this document is that in the first trimester of pregnancy, parenteral quinine is to be preferred. Only if it is not available should Artemisinin derivatives be given. However, in the second and third trimesters, parenteral Artemisinin products are preferred.[1]

The operational document on Malaria Elimination in India, published in 2016, alsocovered treating severeP. falciparum Malaria in the same way as was done by the National Drug Policy on Malaria 2013 given above.[4]

DISCUSSION

The Government of India, in 2016, adopted aframework for Malaria Elimination in India covering the period 2016 – 2030.[5] This was based on WHO's Global Technical Strategy for Malaria, covering the same period, adopted in 2015 and updated in 2021.[6]

The aim is to reach no Malaria cases by 2027 and then wait for three years before WHO can grant Malaria-free status certification. It is already the beginning of 2022 and India is about to reach the halfway mark of this period from 2016 to 2027. The Annual Parasite Incidence (API) has also come down significantly (it was 0.32 during 2018[7]),

CONCLUSION

If a medical practitioner, whether in government service or in private practice, comes across a severe case of P. falciparum Malaria or P. vivax Malaria, he/she can manage the patient using the drugs at the dosages recommended above. This will be a step towards reaching the target of zero Malaria cases in the country by 2027.

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