SEVERE MALARIA ASSESMENT AND MANAGEMENT

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Severe malaria

severe falciparum malaria is defined as one or more of the following, occurring in the absence of an identified alternative cause and in the presence of P. falciparum asexual parasitaemia.

Severe malaria complications

1. Impaired consciousness with a Glasgow coma score < 11 in adults
2. Prostration with inability to sit, stand or walk without assistance
3. Multiple convulsions, more than two episodes within 24 h
4. Acidosis with a plasma bicarbonate level of < 15 mmol/L
5. Hypoglycemia
6. Severe malarial anemia: Hemoglobin concentration ≤ 5 g/dL

Severe malaria complications

1. Renal impairment: Plasma or serum creatinine > 265 µmol/L (3 mg/dL) or blood urea > 20 mmol/L
2. Jaundice: Plasma or serum bilirubin > 50 µmol/L (3 mg/ dL) with a parasite count > 100 000/ µL
3. Pulmonary edema
4. Significant bleeding
5. Shock
6. Hyperparasitaemia - Parasite count > 250,000 /µl, > 10%

Severe P. vivax malaria

- Severe anemia
- Severe thrombocytopenia
- Acute pulmonary edema
- Cerebral malaria
- Pancytopenia
- Jaundice
- **Splenic rupture**
- Hemoglobinuria
- Acute renal failure
- Shock

Assessment of patient with severe malaria

- Patency of airway
- Respiratory rate
- Oxygen saturation
- Blood pressure
- Pulse rate
- Glasgow coma scale
- Blood sugar
- Temperature

Physical examination

- General well being
- Body weight
- Pallor
- Dehydration
- Jaundice
- Bleeding
- Capillary refill
- Cardiovascular exam
- Respiratory system exam- pulmonary edema, acidotic breathing
- Abdominal exam - hepatosplenomegaly
- Nervous system exam - comatose, signs of meningitis, opisthotonus position

Investigation plan

- Complete blood count
- Renal function test and electrolyte
- Blood gas analysis
- Chest x ray
- Lumbar puncture and cerebral spinal fluid analysis
- Liver function test
- Coagulation profile
- Blood culture because severe malaria can coexist with septicemia, pneumonia
- Urinalysis

Management objectives

1. To prevent the patient from dying.
2. To prevent disabilities.
3. To prevent recrudescence of infection.

Management of severe malaria

- **Hyperpyrexia (>39.5)** - Administer tepid sponging, fanning, a cooling blanket and paracetamol.

- **Convulsions** - Maintain airways, treat promptly with intravenous or rectal diazepam, lorazepam, midazolam, Check blood glucose.

Management of severe malaria

- **Acute pulmonary edema** - Prop patient up at an angle of 45 degrees, give oxygen, give a diuretic, stop intravenous fluids, intubate and ventilate when necessary

- **Spontaneous bleeding and coagulopathy** - Transfuse with screened fresh whole blood (cryoprecipitate, fresh frozen plasma and platelets, if available); give vitamin K injection.

Management of severe malaria

- **Shock** – suspect septicemia, take blood for cultures, give parenteral broad spectrum antimicrobials, correct hemodynamic disturbances.

Definitive management

- First line – IV artesunate 2.4mg/kg at 0,12, 24hrs
- Second line – artmether 3.2mg/kg IM maintenance 1.6mg/kg daily
- Third line – quinine 10mg/kg in 5% dextrose 8 hourly

- Once patient is able to tolereate oral med swith to full course of ACT

Treatments of no benefit

- Heparin
- Prostacyclin
- Low- molecular-mass dextran
- **High-dose corticosteroids**
- Aspirin
- Anti-TNF antibody
- Cyclosporine A
- Hyper immune serum
- N-acetylcysteine
- Bolus administration of albumin

References

- WHO guidelines for malaria - 16 October 2023 - World Health Organization (WHO