MALARIA
A DYNAMIC DISEASE
Parasite species

- Sub-Saharan Africa - >90% = Plasmodium Falciparum
- Rest = P. Ovale, P. Vivax, P. Malariae
- Sometimes = mixed infections
- P. Falciparum = may be severe + complicated
  1. delay in treatment
  2. ineffective therapy
  3. underdosing
RISK GROUPS

• Almost all S.A = non-immune
• Immunity acquired after lon term repeated infection – eg- Mozambique, Malawi, Tanzania
• HIGH RISK GROUPS - non-immune travellers, residents in endemic areas of S.A, pregnant women, young children, splenectomy, immunocompromised.
• H.I.V + MALARIA - increase in clinical attacks + higher parasitaemia in Uganda. In S.A higher risk of severe malaria.
CLINICAL PRESENTATION

• 7 days post exposure, average = 10-21 days after mosquito bite
• Longer incubation if on chemoprophylaxis or selected antibiotics
• 6-18 months have been recorded
• P. Vivax, P. Malariae, P. Ovale can take up to 1 year before first manifestation.
INDEX OF SUSPICION

• MALARIA AREAS-North Eastern Kwazulu Natal, low altitude areas of Mpumalanga, Limpopo.

• Endemic in all sub-saharan countries except Lesotho.

• Seasonal peaks. In S.A – Oct to May.
SYMPPTOMS

• Fever is most common
• “flu like” symptoms
• Rigors, headaches, sweating, tiredness, myalgia, abdominal pain, diarrhoea, LOA, nausea, vomiting, cough
• In a febrile pt in S.A, where there is no obvious cause of fever and a recent history of visiting or living in a malaria area is not forthcoming, malaria should be excluded because mosquitos have been documented to travel.
DIFFERENTIAL DIAGNOSIS

- Influenza
- Hepatitis
- Meningitis
- Septicaemia
- Typhoid
- Tick bite fever
- Gastroenteritis
- Viral haem fever
- HIV seroconversion
LAB. DIAGNOSIS

• Blood test for parasites should be done irrespective of time of year, area or chemoprophylaxis.
• Majority of malaria cases reveal parasite.
• But NEGATIVE SMEAR does not exclude diagnosis. Repeat specimens should be examined regularly and urgently until diagnosis confirmed, pt recovers or another diagnosis.
- Examination of peripheral smear = species of parasite + level of parasitaemia.
- High levels of parasites ( >5% or >3+) = SEVERE MALARIA
- However severe disease may show low parasites.
- Commercial kits for rapid diagnosis- detect parasite antigen histidine rich protein 2. = highly sensitive. But dependent on correct usage + interpretation. Should be used for acute malaria only. May be negative early. False + = S.L.E.
• If diagnosis of malaria cant be made, decision to start treatment based on
  1. Clinical grounds
  2. possible exposure to malaria parasite.
  3. severity of clinical picture
  # sometimes pts with severe have negative smear due to sequestration of parasitised RBC’s.
  # Thrombocytopenia is a common finding.
DIAGNOSIS MADE

• Malaria is a notifiable disease.
TREATMENT - Objectives

1. Prevention of mortality
2. Preventions of complications
3. Elimination of parasitaemia to minimise transmission
4. Limit the emergence + spread of drug resistance.
RESISTANCE

• In S.A- Chloroquine resistance first in KZN, then in Mpumalaga.
• Significant resistance to S.P in KZN- in 2001- changed to ARTEMETHER LUMEFANTRINE as first line.
• Advantages= combination drug, improved therapeutic response, potential decrease in transmission ., cost effective.
CHOICE OF CHEMOTHERAPY

- SEVERITY OF DISEASE
- RESISTANT PATTERN IN THAT AREA
- SPECIES OF PARASITE
- AGE, PREGNANCY, CO-MORBIDITY, ALLERGIES, OTHER MEDS
- PRESENCE OF VOMITING
FEATURES OF SEVERE MALARIA

- CLINICAL FEATURES-
  1. impaired consciousness, convulsions
  2. respiratory distress
  3. jaundice
  4. bleeding
  5. shock
• **BIOCHEMICAL**

1. renal impairment- Cr >265 or rapid rise
2. acidosis- HCO$_3^-$ < 15, Lactate > 5
3. hepatic impairment- ALT>3X
4. hypoglycaemia < 2.2
5. hypoxia  pO$_2$ < 8
• HAEMATOLOGICAL:
  1. Parasitaemia > 5% or > 3+
  2. Hb < 6 or Hct < 20%
  3. >5% neutrophils contain malaria pig.
  4. Schizonts of P. falciparum in smear
  5. D.I.C
TREATMENT- uncomplicated

# Artemether + Lumefantrine - < 65kg
# Quinine + doxycycline/ clindamycin
# Mpumalanga + Limpopo = Sulfadoxine-pyrimethamine. BUT soon S.P +artesunate.
TREATMENT-COMPLICATED

- IV Quinine + doxycycline/ clindamycin
- P. Ovale or Vivax = chloroquine + primaquine
- P. Malariae = chloroquine
- If unsure of species treat for P. falciparum.
GENERAL MEASURES

• Adequate fluids + antipyretics
• Monitor mental state, respiratory rate + urine output.
• Easy to underestimate severity
• Complications may arise despite correct treatment.
• Clinical response 24 to 48 hours but fever may last for 5 days.
• Repeat peripheral smear after 72hrs treatment- decrease of > 75% of initial parasite count.

• Drug resistance should be considered if clinical or parasitological response = poor.
**ARTEMETHER LUMEFANTRINE**

- Artemisinin derivative
- Clear parasite mot rapidly from peripheral smear, have favourable safety profile and may reduce malaria transmission by decreasing gametocyte development.
- Effective for uncomplicated P. falciparum + blood stage P. vivax
- Severe malaria only parenteral = effective. In S.A= ARTEETHER= oil based , given I.M
• ARTEMETHER 20mg + LUMERFANTRINE 120mg
• only <65kg
• C/I in pregnancy.
• Absorption is critically dependant on co-administration with food containing milk or fat.
• S/E= GIT, sleep dist., palpitations, myalgia, dizziness.
POINTS TO REMEMBER

1. NEED SUSPICION
2. UNCOMPLICATED OR SEVERE
3. EFFECTIVE TREATMENT- ARTEMETHER LUMEFANTRINE /QUININE
4. NOTIFIABLE DISEASE
5. CLINICAL + PARASITIOLOGICAL RESPONSE.