Lec5 | Antimalarial treatment:

Suppressive treatment
معالجة قمعية

Clinical Apparent

Chloroquine ORAL

- Suppresses the ERYTHROCYTIC CYCLE
- Accumulates in the parasite
  heme ✗ hemozoin
- Well absorbed
- Schizonticide for all malaria types.
  - used in non-falciparum & Sensitive falciparum malaria.
- Chloroquine + Primaquine
  for dormant P.vivax & P.ovale.
- P.falciparum & P.vivax resistance due to P170 glycoprotein mutation which pumps the drug out of the parasite!
- Other uses: RA/LE/amebic liver abscess/ photoallergic rxns/Clonorchis Sinensis
  - another Protozoal agent
- **Side Effects:** (safe drug in general, side effects not lethal)
  Headache, dizziness, Itching and rash.
  Nausea, vomiting, anorexia.
  Unmasking of LE, psoriasis and porphyria.
  Corneal deposits, blindness, blurring of vision.

Quinine & Quinidine:

- General protoplasmic poison (affect the feeding mechanism of the parasite)
- No resistance.
- For Severe falciparum (rapid schizonticid therapy)
- Quinin/Quinidine + Doxycyclin or Clindamycin
  - For Chloroquine-resistant malaria.
  - Short-duration ONLY.
- Other uses: Babesia microti, nocturnal leg muscle cramps
  - due to Arthritis, thrombophlebitis, arteriosclerosis, varicose veins.
- **Adverse Effects:**
  1- Cinchonism (caused by ingesting plenty of the cinchona tree leaves and the drug quinine) which is characterized **primarily** by :Tinnitus, headache, nausea, dizziness, flushing, visual disturbances. **Later**, auditory abnormalities, vomiting, diarrhea, and abdominal pain.
  2- Blood dyscrasias (dyscrasia : the presence of abnormal material in the blood)
  3- Hypersensitivity, hypoglycemia, uterine contractions (may lead to abortion).
  4- Hypotension, QT prolongation (important parameter to test the side effects of drugs)
  QT prolongation means the heart muscle takes longer than normal to recharge between beats which can be seen on the ECG
  5- Blackwater fever (hemolysis, hemoglobinemia, hemoglobinuria, and renal failure) which causes dark red urine

Mefloquine

- A blood schizonticide
  * Not for liver forms.
- For resistant P. falciparum
  - Single ORAL dose.
- For Suppressive & prophylactic treatment
  - weekly doses
- **Side Effects:** (mainly CNS effects)
  Nausea, vomiting, diarrhea, pain. *general*
  Vertigo, dizziness, headache, rashes, visual alterations
  psychosis, hallucinations, confusion, anxiety, depression. *CNS*

Radical cure
معالجة جذرية

For P.vivax & P.ovale.

- Chloroquine مكرر
- then Primaquine
  - For EXOERYTHROCYTIC forms of malaria.
    AFTER treatment with Chloroquine.
  - **Side Effects:**
    Causes hemolysis **only** in G6PD deficient patients.
    Also, nausea, distress, headache, pruritis, leukopenia and agranulocytosis.

Prophylaxis

- Chloroquine مكرر
- Mefloquine مكرر
- Doxycyclin مكرر
- Malarone

A fixed combination of
Atovaquone & Proguanil

- Atovaquone is also used for P. gynoecia pneumonia.
  (But has lower efficacy than Trimethoprim-Sulfamethoxazole combination.
  - **Side Effects:**
    Can cause fever, rash, nausea, vomiting, diarrhea, headache, and insomnia.

Pyrimethamine

- Related to trimthoprim.
- Not for severe malaria
- for ERYTHROCYTIC forms of malaria.
- binds to parasitic enzyme:
- Pyrimethamine + Sulfadoxine (Fansidar) or Sulfones
  - to inhibit Dihydropteroate.
- No Longer used for prophylaxis
- Other uses: Toxoplasmosis & P. jeroveci
- **Adverse Effects:**
  Anorexia, Vomiting, Leucopenia, Thrombocytopenia, glossitis.
  CNS: Stimulation, Convulsions
  Allergic reactions including Stevens-Johnson Syndrome
  (severe exfoliation of the skin and the patient might die if there's dehydration or infection)

Artemisnin (Qinghaosu)

- Artesunate & Artemether. (Artemisia = الشيح)
- Rapid Schizonticide for all malaria types.
- No resistance.
- Form FREE RADICALS or inhibit ATP.
- f) Only drugs reliably effective against quinine resistant and multi-drug resistant strains(because new strains of malaria might also develop resistance to Quinine).
  j) High cost, unavailable.
  h) Causes N,V,D, and neurotoxicity in animals.

Antibiotics

- Tetracyclin, Doxycyclin, Clindamycin, Azithromycin, Fluoroquinolones (like ciprofloxacin)
- For ERYTHROCYTIC forms of malaria.
- For Chloroquine-resistant strains.
- For other protozoal diseases.

Halofantrine & lumefantrine

- Rapidly effective for ERYTHROCYTIC forms of malaria.
- For Chloroquine-resistant strains.
- Well tolerated, except for cardiac toxicity (QT prolongation)

Remember that
Quinine and Quinidine
also cause QT prolongation

Done by:
Cela alahdab.