Department: Nursing
Matric no: 17/mhs02/077

Classify the anti malaria agents

Classification

1)4-Aminoquinolines
Chloroquine no
Amodiaquine

2) Quinoline methanol
Mefloquine

3) Cinchona alkaloid
Quinine
Quinidine

4) Biguanides
Proguanil
(Chloroguanide)

5)Diaminopyrimidines
Pyrimethamine

6) 8-Aminoquinoline
Primaquine
Tafenoquine

7)Sulfonamides & sulfone
Sulfadoxine
Sulfamethopyrazine
Dapsone

8) Antibiotics
Tetracycline
Doxycycline

9) sesquiterpine lactones
Artesunate
Artemether
Arteether

10) Amino alcohols
Lumefantrine

11) Naphthyridine
Pyronaridine

12) Naphthoquinone
Atovaquone

1i) CHOLOROQUINE:

Mechanism of action:

It is actively concentrated by sensitive intra-erythrocytic plasmodia by accumulating in the acidic vesicles of the parasite and weakly basic nature it raises the vesicular pH and thereby interferes with degradation of haemoglobin by parasitic lysosomes.Polymerization of toxic haeme to nontoxic parasite pigment hemozoin is inhibited by formation of chloroquine-heme complex.

1II) AMODIAQUINE:

Mechanism of action:

It is actively concentrated by sensitive intra-erythrocytic plasmodia by accumulating in the acidic vesicles of the parasite and weakly basic nature it raises the vesicular pH and thereby interferes with

degradation of haemoglobin by parasitic lysosomes.Polymerization of toxic haeme to nontoxic parasite pigment hemozoin is inhibited by formation of chloroquine-heme complex

2I) MEFLOQUINE:

Mechanism of action:

It is actively concentrated by sensitive intra-erythrocytic plasmodia by accumulating in the acidic vesicles of the parasite and weakly basic nature it raises the vesicular pH and thereby interferes with degradation of haemoglobin by parasitic lysosomes.Polymerization of toxic haeme to nontoxic parasite pigment hemozoin s inhibited by formation of chloroquine-heme complex.

3I) QUININE:

Mechanism of action:

Quinine is the theorized to be toxic to the malarial pathogens, plasmodium falciparum by interfering with the parasite ability to dissolve and metabolize hemoglobin. As with other quionoline anti malarial drugs, the mechanism for quinine has not been fully resolved. The most widely accepted hypothesis of the action is based on the well studied and closely related quinoline drug, chloroquine. In plasmodium falciparum, quinine has been found to inhibit nucleic acid synthesis, protein synthesis and glycolysis. It also binds with hemozoin in parasitized erythrocytes. Quinine is effective as a malarial suppressant and in control of clinical attacks. It's primary action is schizonticidal, no lethal effect is exerted on sporozoites or pre erythrocytic forms.

4I) PROGUANIL:

Mechanism of action;

When used alone, Proguanil functions as a prodrug. It's active metabolite cycloproguanil is an inhibitor if dihydrofolate reductase DHFR. Although both mammals and parasites produce DHFR, cycloproguanil inhibitory activity is specific for parasitic DHFR. This enzyme is a critical component of the folic acid cycle. Inhibition of DHFR prevents the parasite from recycling dihydrofolate back to tetrahydrofolate. THF is required for DNA synthesis, amino synthesis, and methylation this, DHFR shuts down these processes. Proguanil displays synergism when used in combination with the anti malaria atovaquone.

5) PYRIMETHANINE:

Mechanism of actions:

Pyrimethanine interferes with the regeneration of tetrahydrofolic acid from dihydrofolate by competitively inhibiting the enzyme dihydrofolate reductase. Tetrahydrofolic is essential for DNA and RNA synthesis in many species including Protozoa. It has also been found to reduce the SOD1, a key protein in amyotrophic lateral sclerosis.

6) PRIMAQUINE:

Mechanism of action;

Active against the hepatic stages of all human malarial parasites. Some gametocytes are destroyed while others cannot undergo maturation division in the gutsy the mosquito. Primaquine is lethal plasmodium vivax and plasmodium ovale in the lover stage and plasmodium vivax in the blood stage through its ability to do oxidative damage to the cell.

7) SULFADOXINE:

Sulfadoxine is a sulfa drug,often used in combination with pyrimethanine to treat malaria. The drug can also be used to prevent malaria in people who are living in, or will be traveling to an area where there will be chances of getting malaria. Sulfadoxine targets plasmodium dihydropteroate synthesis and dihydrofolate reductase. Sulfa drugs are anti metabolites. They compete with with para amino

benzoic acid (PABA) for incorporation folic acid. The action of sulfanomides exploits the difference between mammal cells and other kind of feels in their folic acid for growth.

8) TETRACYCLINE:

Mechanism of actions;

Tetracycline antibiotic are protein synthesis inhibitors. They inhibit the initiation of translation in variety of ways binding to the 30s ribosomal sub uni, which is made up of 16s rRNA and 21 proteins. They inhibit the binding of aminoacyl-tRNA to the mRNA translation complex. Tetracycline also has been found to inhibit matrix mettaloproteinase. This mechanism does not add to their Anyi biotic effects, but has led extensive research on chemically modified tetracycline for the treatment of acne, diabetes and types of neoplasm.

9) ARTESUNATE:

Mechanism of action;

Artesunate is a drug that is actively converted to its active form dihydroarteminism. This process involves hydrolysis of 4 carbon ester group via plasma esterase enzyme. It is hypothesized that the cleavage of endoperoxide bridge in the pharmacophore of DHA generates reactive oxygen species which increased oxidative stress and causes malarial protein damage by alkylation . In addition, artesunate potently inhibits the essential plasmodium falciparum exported protein1, a membrane glutathione 5 transferase. As a result, the amount of glutathione in the parasite is reduced.

10) LUMENFANTRINE :

Mechanism of action ;

The exact mechanism it exerts on anti malarial
Is unknown . However, available data suggests that lumenfantrine inhibits the formation of 8 heyamin by forming a complex with hemin and inhibits nucleic acid and protein synthesis.

11) PYRONARIDINE:

Mechanism of action ;

In erythrocytic plasmodium falciparum and plasmodium berghei cultured in vitro in human erythrocytes, pyronaridine induced modifications to the food vacuole followed by the rapid formation of multilameliate whorls in the pellicular complexes of trophozoites. Similarly, ultra structural analysis of plasmodium falciparum after pyronaridine treatment of infected printed showed the earliest and the most distinct effect of therapy was on the parasite food vacuole of late trophozoites and schizonts, specifically, undigested.