NAME: FASOIRO OYINDAMOLA ABOLANLE

MATRIC NUMBER: 17/ MHS06/034

COURSE CODE: PHARM 302

Chloramphenicol:

Chloramphenicol is a bacteriostatic broad-spectrum antibiotic that is active against both aerobic and anaerobic gram-positive and gram-negative organisms.

It is active also against rickettsiae. Haemophilus influenzae, N. meningitidis, and some strains of Bacteroides are highly susceptible, and for them chloramphenicol may be bactericidal.

Clinically significant resistance emerges and may be due to production of chloramphenicol acetyltransferase, an enzyme that inactivates the drug.

This is by the transfer of R- factor by conjugation.

Also decreased permeability into the resistant bacterial cells and lowered affinity of bacterial ribosome for chloramphenicol is another mechanism.

•Mechanisms of action:

Chloramphenicol blocks proper binding of 50S site which, stops protein synthesis.

It does inhibit mitochondrial ribosomal protein synthesis because these ribosomes are 70S, the same as those in bacteria.

It hinders the transfer of the elongating peptide chain to the newly attached amino acyl tRNA at the ribosome mRNA complex.

It specifically attaches to the 50S ribosome and therefore hinder the access of aminoacyl-tRNA to the acceptor for amino acid incorporation

It prevents formation of peptide bond

This may be responsible for the dose related anemia caused by chloramphenicol

•Adverse Reactions

Gastrointestinal disturbances: Adults occasionally develop nausea, vomiting, and diarrhea.

Oral or vaginal candidiasis may occur as a result of alteration of normal microbial flora.

Bone marrow disturbances: Chloramphenicol commonly causes a dose-related reversible suppression of red cell production at dosages exceeding 50 mg/kg/d after 1-2 weeks.

Aplastic anemia is a rare consequence of chloramphenicol administration by any route. It is an

idiosyncratic reaction unrelated to dose, though it occurs more frequently with prolonged use. It tends to be irreversible and can be fatal.

The major toxicity of chloramphenicol is hemorrhage.

•Toxicity for newborn infants:

Newborn infants lack an effective glucuronic acid conjugation

mechanism for the degradation and detoxification of chloramphenicol.

Consequently, when infants are given dosages above 50 mg/kg/d, the drug may accumulate, resulting in the gray baby syndrome, with vomiting, flaccidity, hypothermia, gray color, shock, and collapse.

•Chloramphenicol is relatively toxic, and can cause severe agranulocytosis. It crosses the placenta well and can reach therapeutic concentrations in the fetus.

Sufficient experience with the use of chloramphenicol is available. There is no evidence that chloramphenicol increases the incidence of congenital malformations.Chloramphenicol should not be used in the last weeks of pregnancy as, owing to inadequate metabolism in the neonate, toxic concentrations can be reached which may cause the “gray baby syndrome” (feeding problems, vomiting, ash-gray skin, respiratory distress, and cardiovascular collapse), which may be fatal in the neonate

Chloramphenicol (CAP) is a potent and efficient antibiotic used since years against many pathogens. Despite being highly effective, it shows severe toxicity in the form of Aplastic anemia (AA) and bone marrow suppression. Its D – form is the toxic one and inhibits protein synthesis. In living system, CAP is hydrolyzed and absorbed completely. Its excretion is also at a high rate but is highly impaired in disorders associate liver and kidneys. It is metabolized in liver to Chloramphenicol glucuronide. Being highly toxic, it is still prescribed at a noticeable rate. It is recommended to be prescribed to be only when there is no other alternative is present with a monitoring of its concentration in patients body.

Indication for use:

Chloramphenicol is administered orally, intravenously, or intramuscularly

•Chloramphenicol is an antibiotic useful for the treatment of a number of bacterial infections. This includes use as an eye ointment to treat conjunctivitis. By mouth or by injection into a vein, it is used to treat meningitis, plague, cholera, and typhoid fever.