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PHA 302

Question : Write on a named bacterial protein synthesis inhibitor, stating it's mechanism of action, indication for use, toxicity and adverse effects.

Adverse effects

The most concerning side effects, as with other aminoglycosides, are kidney toxicity and ear toxicity.

Transient or permanent deafness may result. The vestibular portion of cranial nerve VIII (the vestibulocochlear nerve) can be affected, resulting in tinnitus, vertigo, ataxia, kidney toxicity, and can potentially interfere with diagnosis of kidney malfunction.

Common side effects include vertigo, vomiting, numbness of the face, fever, and rash. Fever and rashes may result from persistent use.

Use is not recommended during pregnancy.

Congenital deafness has been reported in children whose mothers received streptomycin during pregnancy.

Use appears to be okay while breastfeeding.

It is not recommended in people with myasthenia gravis.

Toxicity

* Ear Toxicity

* Kidney Toxicity

Mechanism of action of Streptomycin

Streptomycin is a protein synthesis inhibitor.

It binds to the small 16S rRNA of the 30S subunit of the bacterial ribosome, interfering with the binding of formyl-methionyl-tRNA to the 30S subunit.

This leads to codon misreading, eventual inhibition of protein synthesis and ultimately death of microbial cells through mechanisms that are still not understood.

Indication for use as :

Medication

Infective endocarditis caused by enterococcus when the organism is not sensitive to gentamicin.

Tuberculosis in combination with other antibiotics.

For active tuberculosis, it is often given together with isoniazid, rifampicin, and pyrazinamide.

It is not the first-line treatment, except in medically under-served populations where the cost of more expensive treatments is prohibitive.

It may be useful in cases where resistance to other drugs is identified.

Plague (Yersinia pestis) has historically been treated with it as the first-line treatment.

However streptomycin is approved for this purpose.

In veterinary medicine, streptomycin is the first-line antibiotic for use against gram negative

bacteria in large animals (horses, cattle, sheep, etc.).

It is commonly combined with procaine penicillin for intramuscular injection.

Tularemia infections have been treated mostly with streptomycin.

Streptomycin is traditionally given intramuscularly, and in many nations is only licensed to be administered intramuscularly, though in some regions the drug may also be administered intravenously.