Fluoroquinolones

This group of medications are broad spectrum antibiotics. They can be administered orally for serious bacterial infections, but are not effective with staphylococcal infections. These medications, which end in “floxacin” are bactericidal, and have notable side effects like achilles tendon rupture, GI upset and photosensitivity.



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End in "-floxacin"
Flock-of-oxen
Fluoroquinolone medications typically have a suffix ending with “-floxacin.” These drugs include ciprofloxacin, norfloxacin, ofloxacin, gemifloxacin, moxifloxacin, and levofloxacin.

Mechanism of Action

Bactericidal
Bacteria-sliders
Unlike bacteriostatic agents, which simply stop bacteria from reproducing, bactericidal agents actually cause bacterial cell death. They work by inhibiting synthesis of proteins and bacterial enzymes used for DNA replication and cell division. The lack of bacterial enzymes leads to breaks in the DNA, killing the bacteria directly. A higher concentration of medication leads to quicker eradication of the infection.

Indications

Variety of Infections
Different Bacteria
These drugs are used for a variety of infections, with examples such as anthrax, E. coli, Salmonella, and Shigella. They are indicated for gram-negative rods causing UTIs, but also have coverage against some gram-positive organisms.

Side Effects

GI Distress
GI with Flare-gun
The most common side effect of medications from the fluoroquinolones drug class is GI upset. Patients can complain of diarrhea, nausea and vomiting from taking these medications.

Photosensitivity
Photo-camera causing Sensitive-tears
An important side effect of fluoroquinolones is photosensitivity, as they can increase the risk of sunburn under exposure to light. Thus, patients should be advised to protect themselves from sunlight exposure by limiting outdoor time and wearing long-sleeved clothing and hats. This occurs because skin cells exposed to UV lights are more prone to DNA strand breakage when taking these medications.

Achilles Tendon Rupture
Achilles Tendon Rupturing
Though a less common side effect, this drug class can lead to tendonitis or tendon rupture, usually of the Achilles tendon. This happens more often in older, male patients, and risk of rupture increases when they are taking steroids. If the medication is discontinued early at the first sign of tendon pain, inflammation, or swelling, tendon rupture can be prevented.

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Contraindications

Pregnancy

Pregnant

These drugs are not given to pregnant women or nursing mothers as they can possibly cause impairment of growing cartilage in the fetus and newborns.

Children

Child

Fluoroquinolone medications are not given to children under the age of 18, as they can lead to impaired growth of cartilage.

Myasthenia Gravis

Mice-thin-eye in Grave

Fluoroquinolone exposure may result in potentially life-threatening myasthenia gravis exacerbations in patients with underlying disease, as these drugs exhibit neuromuscular blockade, causing muscle weakness.

Considerations

Avoid Milk Products or Antacids

Avoiding Milk and Ant-acid

Patients should avoid milk products and antacids, as these drugs interact with cations, which exist in antacid medications and calcium-containing foods. With these cations, fluoroquinolones form insoluble chelation complexes in the GI tract and prevent drug absorption.

Slow IV Infusion

Snail IV

These medications when given IV should be diluted and given by slow infusion over a period of 60 minutes. This will minimize patient discomfort and reduce the risk of venous irritation.

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