Cephalexin: Indications, Doses, Mechanism of action and Side effects

Cephalexin is an antibiotic that belongs to a class of cephalosporins. It is a bacteriacidal drug and has an antimibrobial activity that is similar to that of cephaloridine and cephalothin agains both gram negative and gram positive bacteria.

In vitro tests demonstrate that cephalosporins are bactericidal because of their mechanism of action of inhibitin the cell-wall synthesis.

Indications of cephalexin

Cephalexin is indicated in management of diseases caused by susceptible microorganisms such as;

1. Respiratory tract infections

2. Otitis media

3. Skin and soft tissue infections

4. Bone and joint infections

5. Genitourinary tract infections

6. Acute prostatitis and

7. Dental infections

Pharmacokinetics

Absorption: Cephazoloin is rapidly absorbed from the gastrointestinal tract upon administration and achieves peak plasma concentrations about an hour after administration.

Distribution: About 10-15% of the administered dose is bound to plasma proteins.

Metabolism: It difuses across the placenta and small quantities are found in breast milk of nursing mothers. Therapeutic concentration levels have also been detected in bile.

Excretion: About 80% of the administered drug is excreted unchanged in urine.

Dosage

In adults;

Cephalexin dosage is 1-4 grams per day administered in divided doses. Most infections will respond to doses of 500mg every 8 hours.

For skin and soft tissue infections, streptococcal pharyngitis and mild uncomplicated urinary tract infections, the usual dose is 250 mg every 6 hours or 500mg every 12 hours.

More severe infections or those caused by less susceptible organisms may need larger doses. If daily doses of cephalexin are greater than 4 grams are required, a parenteral form of cephalexin is more appropriate for these cases.

In elderly and patients with impaired renal function:

These patients should receive similar doses as for adults but in renal failure patients, the dosage should be reduced to a daily maximum dose of 500mg if renal function is severely impaired (grlomerular filtration rate of less than 10ml/minute).

In children;

The recommended daily dose of cephalexin in children is 25-50mg/kg body weight (10-20 mg/lb) in divided doses.

For skin and soft tissue infections, streptococcal pharyngitis and mild, uncomplicated urinary tract infections, the total daily dose may be divided and administered every 12 hours.

For most infections the following schedule is suggested:

Children under 5 years the dose is 125 mg every 8 hours

Children of 5 years and above the dose is 250 mg every 8 hours.

In severe infections, the dose may need to be doubled.

In the therapy of otitis media, clinical studies have shown that a dosage of 75-100mg/kg body weight per day in 4 divided doses is required.

In the treatment of beta hemolytic streptococcal infections, a therapeutic dose should be administered for atleast 10 days.

Contraindications

Cephalexin is contraindicated in patientswith known allergy to penicillins and cephalosporins group of antibiotics.

It should be given cautiously to patients who have shown hypersensitivitu to other drugs.

Cephalosporins should be used with caution in patients with penicillin sensitivity as there are some evidence of partial cross-allergenicity between the penicillins and cephalosporins. Patients have had severe reactions including anaphylaxis to both drugs.

Cephalexin is contraindicated in patients with acute porphyria.

Special precautions

In an allergic reaction to Cephalexin occurs, the drug should be discontinued and the patient treated with the appropriate agents. Prolonged use of Cephalexin may result in the overgrowth of susceptible organisms.

Careful observation of a patient is essential.

If superinfection occurs then the drug should be discontinued or appropriate measures taken.

Pseudomembraneous colitis has been reported with virtually all broad spectrum antibiotics including macrolides, semisythetic penicillins and cephalosporins. It is important therefore to consider its diagnosis in patients who develop diarrhea in association with the use of antibiotics. Such colitis may range in severity from mild to life threatening. Mild cases ofpseudomembraneous colitis usually respond to drug discontinuance alone.

In moderate to severe life threatening cases, appropriate measures should be taken.

Cephalexin should be administered with caution in patients with markedly inpaired renal function. Careful clinicals and lab studies should be madebecause the dosage may be lower than the usually recommended dose.

Positive direct Coomb's test have been reported during the treatment with the cephalosporin antibiotics. Inhematological studies or in transfusion cross-matching procedures when antiglobulin tests are performed on the minor side, or in Coombs testing of newborns whose mothers have received cephalosporin antibiotics before parturition, it should be recognized that a positive Coombs test may be due to a drug.

A false positive reaction to glucose in the urine may occur with Benedicts solution or Fehling's solution or with copper sulphate test tablets.

Patients with rare hereditary problems of galactose intolerance, the Lpp lactate deficiency or glucose-galactose malabsorption should not take this medicine.

Drus Interactions

Probenecid causes reduced renal excretion of cephalexin leading to increased plasma cephalexin levels.

Cephalosporins may have an increased risk of nephrotoxicity in the presence of Amphotericin, loop diuretics, aminoglycosides, capreomycin or vancomycin.

Hypokalemia has been described in patients taking cytotoxic drugs for leukemia when they are given gentamicin and cephalexin.

Pregnancy and lactation

Although laboratory and clinical studies have shown no evidence of teratogenicity, caution should be excercised when prescribing cephalexin to the pregnanct patient.

In nursing mothers: The excretion of Cephalexin in human breast milk increased up to 4 hours following a 500 mg dose. The drug reached a maximum level of 4 micrograms/ml then decreased gradually and had dissapeared 8 hours after administration. Caution should be excercised when Cephalexin is administered to a nursing woman mother, possible effects to the infant include modification of bowel flora.

Side Effects of cephalexin

Gastrointestinal: Symptoms of pseudomembraneous colitis may appear either during or after antibiotic treatment. Nausea and vomiting have been reported rarely. The most frequent side effect has been diarrhea. It was very rarely severe enough to warrant cessation of therapy. Dyspepsia and abdominal pain have also occured.

Hypersensitivity: Allergic reactions have been observed in the form of rash, urticaria, angio-edema, rarely erhythema multiforme, Stevens-Johnson Syndrome and toxic epidermal necrolysis. These reactions usually subside upon discontinuation of the drug, although in some cases supportive therapy may be necessary.

Anaphylaxis has also been reported.

Haemic and Lymphatic system: Eosinophilia, neutopenia, thrombocytopenia, hemolytic anaemia and positive Coomb's test have been reported.

Hepatic: As with other penicillins and some other cephalosporins, transient hepatitis and cholestatic jaundice have been reported rarely. Slight elevations of AST and ALT have been reported.

Other: These have included genital and anal pruritus, genital moniliasia, vaginitis and vaginal discharge, dizziness, fatigue, headache, agitation, confusion, hallucinations, fever, arthralgia, arthritis and joint disorder.

Hyperactivity, nervousness, sleep disturbances and disturbances and hypertonia have also been reported. Reverse interstinal nephritis has been reported rarely and toxic epidermal necrolysis have been reported rarely.

Overdosage

Symptoms of overdosage may include nausea, vomiting, epigastric distress, diarrhea and hematuria.

In the event of severe overdodage, general supportive care is recommended including dose clinical and laboratory monitoring of hematological, renal, and hepatic functions and coagulation status until the patient is stable. Forced diuresis, peritoneal dialysis, hemodialysis, or charcoal haemoperfusion have not been established as beneficial for an overdose of cephalexin. It would be extremely unlikely that one of these procedures would be indicated.

Unless 5-10 times the normal data daily dose has been ingested, gastro-intestinal decontamination should not be necessary.

There have been reports of hematuria without impairement of renal function in children accidentally ingestingmore than 3.5 grams of cephalexin in a day.

Treatment has been supportive (fluids) and no sequelae have been reported.