micafungin (my-ka-fun-gin)

MCANZ

Classification
Therapeutic: antifungals
Pharmacologic: echinocandins

Pregnancy Category C

Indications

Action
Hinders synthesis of glucan required for the formation of fungal cell wall. Therapeutic Effects: Death of susceptible fungi.

Spectrum: Active against the following Candida spp.: C. albicans, C. glabrata, C. tropicalis, C. parapsilosis, C. krusei.

Pharmacokinetics
Absorption: IV administration results in complete bioavailability.
Distribution: Unknown.
Protein Binding: >99%.
Metabolism and Excretion: Mostly metabolized; 71% fecal elimination.
Half-life: 15 hr.

TIME/ACTION PROFILE
ROUTE ONSET PEAK DURATION
IV rapid end of infusion 24 hr

Contraindications/Precautions
Contraindicated in: Hypersensitivity.
Use Cautiously in: Severe hepatic impairment; OB: Use only if clearly needed; Lactation: Pedi: Children 4 mo (safety not established).

Adverse Reactions/Side Effects

Interactions
Drug-Drug: ↑ Blood levels and risk of toxicity with sirolimus and nifedipine (dose adjustments may be necessary).

Route/Dosage
IV (Adults):
- Esophageal candidiasis—150 mg daily for 15 days (range 10–30 days);
- Candidemia/acute disseminated candidiasis/Candida peritonitis and abscesses—100 mg daily for 15 days (range 15–47 days);
- Prevention of Candida infections in stem cell transplantation—50 mg daily (duration range 6–51 days).

IV (Children <110 kg): Esophageal candidiasis—2.5 mg/kg daily (maximum daily dose = 150 mg);
- Candidemia/acute disseminated candidiasis/Candida peritonitis and abscesses—2 mg/kg daily (maximum daily dose = 100 mg);
- Prevention of Candida infections in stem cell transplantation—1 mg/kg daily (maximum daily dose = 50 mg).

IV (Children ≥110 kg): Esophageal candidiasis—3 mg/kg daily;
- Candidemia/acute disseminated candidiasis/Candida peritonitis and abscesses—2 mg/kg daily;
- Prevention of Candida infections in stem cell transplantation—1 mg/kg daily.

IV (Neonates): 7–10 mg/kg daily. Higher dose should be used in neonates <27 weeks gestation and those with meningitis.

NURSING IMPLICATIONS

Assessment
- Assess symptoms of esophageal candidiasis (odynophagia, retrosternal pain) prior to and during therapy.
- Monitor for signs of anaphylaxis (rash, pruritus, wheezing, laryngeal edema, abdominal pain). Discontinue micafungin and notify health care professional immediately if these occur.
- Monitor for injection site reactions (phlebitis, thrombophlebitis) during therapy. These occur more frequently in patients receiving micafungin via peripheral IV infusion.

Patient/Family Teaching
- Advise patient not to take other medications without consulting health care professional.
- May cause ↑ serum alkaline phosphatase, bilirubin, ALT, AST, and LDH levels. If elevations occur, monitor for worsening liver function; may require discontinuation of therapy.
- May cause ↑ BUN and serum creatinine.

NURSEfy INDICATIONS
- Discontinued.
May cause leukopenia, neutropenia, thrombocytopenia, and anemia. Monitor for worsening levels; may require discontinuation of therapy.

May cause hypokalemia, hypocalcemia, and hypomagnesemia.

Potential Nursing Diagnoses
- Risk for infection (Indications)

Implementation

IV Administration

- **Intermittent Infusion:** Diluent: For adults: Reconstitute each 50-mg vial with 5 mL of 0.9% NaCl or D5W to achieve concentration of 10 mg/mL. Reconstitute each 100-mg vial with 5 mL of 0.9% NaCl or DSW to achieve concentration of 20 mg/mL. Dissolve by gently swirling vial; do not shake vigorously. Directions for further dilution based on indication for use. For prophylaxis of Graft-vs-Host infections, add 50 mg of micafungin to 100 mL of 0.9% NaCl or D5W. For treatment of esophageal candidiasis, add 150 mg of micafungin to 100 mL of 0.9% NaCl or D5W. Reconstituted vials and infusion are stable for 24 hr at room temperature. Protect diluted solution from light. Concentration: 0.5–1.5 mg/mL.

- For Children: Determine dose and divide by final concentration (10 or 20 mg/mL). Add withdrawn volume to 0.9% NaCl or D5W in IV bag or syringe. Concentration: 0.5 mg/mL–4 mg/mL. Concentrations >1.5 mg/mL should be administered via central venous catheter to minimize infusion reactions. Discard unused vials. Rate: Flush line with 0.9% NaCl prior to administration. Infuse over 1 hr. More rapid infusions may result in more frequent histamine-mediated reactions.

- **Y-Site Compatibility:** amikacin, aminophylline, bumetanide, calcium chloride, calcium gluconate, cyclosporine, dopamine, eptifibatide, esmolol, fentanyl, furosemide, heparin, hydromorphone, lidocaine, lorazepam, magnesium sulfate, mesna, milrinone, nitroglycerin, nitroprusside, norepinephrine, phenylephrine, potassium chloride, potassium phosphates, sodium phosphates, tacrolimus, theophylline, vasopressin.

- **Y-Site Incompatibility:** amiodarone, amlodipine, atropine, clofazimine, cisatracurium, cimetidine, cyclophosphamide, diltiazem, dobutamine, dopamine, epinephrine, insulin, labetalol, levofloxacin, meperidine, midazolam, morphine, nitroglycerin, nitroprusside, norepinephrine, phenylephrine, potassium chloride, potassium phosphates, sodium phosphates, theophylline, vancomycin.

Patient/Family Teaching

- Inform patient of the purpose of micafungin.
- Instruct patient to notify health care professional immediately if signs of anaphylaxis occur.

Evaluation/Desired Outcomes

- Resolution of signs and symptoms of esophageal candidiasis, candidemia, acute disseminated candidiasis, candidal peritonitis and abscesses.
- Prevention of Graft-vs-Host infections during hematopoetic stem cell transplantation.

Why was this drug prescribed for your patient?