dapsone (dap-sohn)

Acne, Leprosy

Classification
Therapeutic: leprostatic agents, anti-infectives

Pregnancy Category C

Indications
Treatment of leprosy (in combination with other agents). Treatment of acne vulgaris (topical).

Unlabeled Use: Prevention (as monotherapy) and treatment of Pneumocystis jirovecii pneumonia (with trimethoprim or other agents).

Action
Interferes with folate synthesis in susceptible organisms. Therapeutic Effects: Bacteriostatic action.

Spectrum: Active against: Mycobacterium leprae, Pneumocystis jirovecii.

Pharmacokinetics
Absorption: Slowly absorbed (70–80%) following oral administration; acidic environment promotes absorption.

Distribution: Widely distributed; crosses the placenta and enters breast milk in significant concentrations.

Protein Binding: Dapsone—70–90%; MADDS—99%.

Metabolism and Excretion: Mostly metabolized by the liver to monoacetyl dapsone (MADDS), its major metabolite, which is then metabolized back to dapsone.

Half-life: 10–50 hr.

TIME/ACTION PROFILE (blood levels)

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Contraindications/Precautions
Contraindicated in: Hypersensitivity (cross-reactivity with sulfonamides may occur); Lactation: Lactation.

Use Cautiously in: Severe anemia; G6PD deficiency (risk of severe hemolytic anemia); Impaired hepatic function; OB: Pregnancy.

Adverse Reactions/Side Effects
CNS: headache, insomnia, mood changes, tonic-clonic movements (topical), vertigo.
EENT: blurred vision, tinnitus, pharyngitis (topical). GI: nausea, pancreatitis, vomiting.
Derm: Stevens-Johnson syndrome, exfoliative dermatitis, hypersensitivity reactions including erythema nodosum leprosum, photosensitivity, systemic lupus erythematosus.
Hemat: agranulocytosis, metheglobinemia, hemolytic anemia, reticulocytosis.
Neuro: peripheral neuropathy.

Interactions
Drug-Drug: Concurrent administration with didanosine or antacids may decrease absorption of dapsone (separate administration times by 2 hr). Blood levels may be decreased by amiodarone, fluconazole, ketoconazole, itraconazole, clarithromycin, erythromycin, quinidine, verapamil, or diltiazem. Blood levels may be increased by rifampin, phenytoin, phenobarbital, or carbamazepine. Coadministration with trimethoprim results in increased levels of both agents. Concurrent use with agents causing blood dyscrasias or hemolytic anemia may increase the risk of these adverse effects.

Drug-Natural Products: St. John’s wort may increase blood levels of dapsone.

Route/Dosage
Leprosy
PO (Adults): 50–100 mg/day for 3–10 yrs—.
PO (Children): 1–2 mg/kg/day, up to 100 mg/day.

Dermatitis Herpetiformis
PO (Adults): Initiate therapy with 50 mg/day, up to 300 mg/day may be required.

Acne Vulgaris
Topical (Adults and Children ≥12 yrs): Apply small amount twice daily.

Pneumocystis jirovecii Pneumonia
PO (Adults): Prophylaxis—100 mg/day. Treatment—100 mg/day (in combination with trimethoprim) for 21 days.
Dapsone

PO (Children >1 mo): Prophylaxis—2 mg/kg/day (up to 100 mg/day) once daily, or 4 mg/kg once weekly (up to 200 mg/dose).

NURSING IMPLICATIONS

Assessment

● Leprosy: Assess skin lesions prior to and periodically throughout therapy.

● Assess skin for new or toxic dermatologic reactions during therapy. Follow dermatologic reaction in leprosy reactions closely. Dapsone should be discontinued promptly. Large doses of corticosteroids should be given if severe reactions or neutropenia occurs.

● Pneumocystis jirovecii pneumonia: Assess patient for infection (oral lesions, sputum, X-ray), and monitor respiratory status (rate, character, lung sounds, dyspnea, syncope) at beginning of and throughout therapy.

● Obtain specimen for culture and sensitivity prior to initiating therapy. First dose may be given before receiving results.

● Acne: Assess lesions periodically during therapy.

● Lab Test Considerations: Monitor AST and ALT prior to and periodically during therapy. Discontinue dapsone if there is evidence of progressive hepatic damage.

● Monitor patients for hemolysis. Screen patients at higher risk for G6PD deficiency (patients of African American or Mediterranean ancestry) prior to oral therapy. If hemolysis occurs, discontinue and do not restart dapsone.

● Monitor CBC and reticulocyte counts prior to treatment, then weekly for 1st mo, then monthly for 6 mo, and then semiannually thereafter. In patients with HIV, monitor counts every 2–3 days for the first 2–3 wk of therapy. Discontinue dapsone and monitor patients closely if significant reduction in leukocytes, platelets, or hematocrit occurs or if there is an increase in reticulocyte count.

● Obtain serum methemoglobin in patients with cyanosis, lightheadedness, fatigue, headache, or shortness of breath. Treatment with methylene blue should be considered in symptomatic patients with levels >15%.

Potential Nursing Diagnoses

Risk for infection (Indications)

Deficient knowledge, related to medication regimen (Patient/Family Teaching)

Noncompliance (Patient/Family Teaching)

Implementation

● PO: May be taken with food if GI upset occurs.

● Do not administer concurrently with alkaline drugs (e.g., antacids, didanosine); separate administration times by 2 hrs.

● Topical: Apply to clean, dry skin and rub in thoroughly. Wash hands after application.

Patient/Family Teaching

● Instruct patient to take dapsone as directed for the full course of therapy, even if feeling well. Doses should be taken at the same time each day. Take missed doses as soon as possible without doubling, do not double doses.

● Emphasize the importance of regular follow-up and blood work to check progression. Advise patient to consult health care professional if no improvement is seen in 2–3 mo in patients with leprosy, 1 wk in patients with Pneumocystis jirovecii pneumonia, or within 24–48 hr in patients with dermatitis herpetiformis.

● Instruct patient to consult health care professional before taking any RX, OTC, or herbal products.

● Instruct patient to notify health care professional immediately if rash, sore throat, fever, chills, pneumonia, nausea, vomiting, or bleeding occurs.

● Advise patient to notify health care professional if pregnancy is planned or suspected. Avoid breast feeding during therapy.

Evaluation/Desired Outcomes

● Healing of skin lesions in patients with leprosy. May require 6 mo–3 yr or more in patients with indeterminate and tuberculoid leprosy, 2–10 yr in borderline (dimorphic) leprosy, and 2 yr to life in lepromatous leprosy.

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