tocilizumab (too-si-liz-o-mab)

Action
Acts as an inhibitor of interleukin-6 (IL-6) receptors by binding to them. IL-6 is a mediator of various inflammatory processes.

Therapeutic Effects:
Slowed progression of rheumatoid arthritis or systemic/polyarticular juvenile idiopathic arthritis.

Pharmacokinetics
Absorption: IV administration results in complete bioavailability.
Distribution: Unknown.
Metabolism and Excretion: Unknown.
Half-life: 4 mg/kg dose—up to 11 days; 8 mg/kg—up to 13 days.

TIME/ACTION PROFILE (improvement)

<table>
<thead>
<tr>
<th>ROUTE</th>
<th>ONSET</th>
<th>PEAK</th>
<th>DURATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>IV</td>
<td>within 1 mo</td>
<td>4 mo</td>
<td>unknown</td>
</tr>
<tr>
<td>Subcut</td>
<td>unknown</td>
<td>unknown</td>
<td>unknown</td>
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</tbody>
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Contraindications/Precautions
Contraindicated in: Hypersensitivity; Serious infections; Active hepatic disease; absolute neutrophil count (ANC) < 2000/mm^3 (< 500/mm^3 while on therapy); platelet count < 100,000/mm^3 (< 50,000/mm^3 while on therapy).

Use Cautiously in: Patients at risk for GI perforation, including patients with diverticulitis; Renal or hepatic impairment; Patients with tuberculosis risk factors; Geri: q risk of adverse reactions; OB: Use only if potential benefit justifies potential risks to fetus; Pedi: Children < 2 yr (safety not established).

Adverse Reactions/Side Effects
CNS: headache, dizziness.
EENT: nasopharyngitis.
Resp: upper respiratory tract infections.
CV: hypertension.
GI: GASTROINTESTINAL PERFORATION, q liver enzymes.
Derm: rash.
Hemat: NEUTROPENIA, THROMBOCYTOPENIA.
Metab: q lipids.
Misc: ANAPHYLAXIS, SERIOUS INFECTIONS INCLUDING TUBERCULOSIS, Disseminated fungal infections, hypersensitivity reactions including ANAPHYLAXIS, infusion reactions.

Interactions
Drug-Drug: May alter the activity of CYP450 enzymes; the effects of the following drugs should be monitored: cyclosporine, theophylline, warfarin, hormonal contraceptives, atorvastatin and lovastatin. Other drugs which are substrates for this system should also be monitored; effect may persist for several weeks after discontinuation. May antibody response to and risk of adverse reactions to live virus vaccines; do not administer concurrently.

Route/Dosage
Rheumatoid Arthritis
IV (Adults): 4 mg/kg every 4 wk; may be q to 8 mg/kg given every 4 wk based on clinical response.
Subcut (Adults): 162 mg every 2 wk, may be every wk based on clinical response.
Subcut (Adults): 162 mg every wk.

Systemic Juvenile Idiopathic Arthritis
IV (Children <6 yr and/or <30 kg): 12 mg/kg every 2 wk.
IV (Children ≥6 yr and ≥30 kg): 8 mg/kg every 2 wk.

Polycystic Juvenile Idiopathic Arthritis
IV (Children ≥6 yr and ≥30 kg): 8 mg/kg every 4 wk.
IV (Children ≥6 yr and ≥30 kg): 8 mg/kg every 6 wk.
NURSING IMPLICATIONS

Assessment
- Assess patient and range of motion before and periodically during therapy.
- Assess for signs of infection (fever, dyspnea, flu-like symptoms, frequent or painful urination, redness or swelling at the site of a wound), including tuberculosis, prior to injection. Tocilizumab is contraindicated in patients with active infection. Monitor new infections closely; most common are upper respiratory tract infections, bronchitis, and urinary tract infections. Signs and symptoms of inflammation may be worsened due to suppression from tocilizumab. Infections may be fatal, especially in patients taking immunosuppressive therapy. If patient develops a serious infection, discontinue tocilizumab until infection is controlled.
- Monitor for injection site reactions (redness and/or itching, rash, hematoma, bruising, pain, or swelling). Rash will usually disappear within a few days. Application of a cool, wet washcloth or cold water may relieve pain or swelling.
- Monitor patient for signs of anaphylaxis (urticaria, dyspnea, facial edema) following injection. Medications (antihistamines, corticosteroids, epinephrine) and equipment should be readily available in the event of a severe reaction. Discontinue tocilizumab immediately if anaphylaxis or other severe allergic reaction occurs.
- Assess patient for latent tuberculosis (sputum, hemoptysis, weight loss, sweats, cough, dypsnea, pulmonary infiltrates, serious systemic illness with or without concomitant shock). Ascertain if patient lives in or has traveled to areas of endemic mycoses. Consider empiric antifungal treatment for patients at risk of histoplasmosis and other invasive fungal infections until the pathogens are identified. Consult with an infectious diseases specialist. Consider stopping tocilizumab until the infection has been diagnosed and adequately treated.
- Lab Test Considerations: Assess CBC with platelet count and liver function tests prior to initiation of therapy. Treatment of latent tuberculosis should be started before therapy with tocilizumab.
- Assess for signs and symptoms of systemic fungal infections (fever, malaise, weight loss, seizures, dyspnea, pulmonary infiltrates, systemic illness with or without concomitant shock). Ascertain if patient lives in or has traveled to areas of endemic mycoses. Consider empiric antifungal treatment for patients at risk of histoplasmosis and other invasive fungal infections until the pathogens are identified. Consult with an infectious diseases specialist. Consider stopping tocilizumab until the infection has been diagnosed and adequately treated.
- Lab Test Considerations: Assess CBC with platelet count and liver function tests prior to initiating therapy and every 4–8 weeks during therapy. Do not administer solutions that are discolored or contain particulate matter. Discontinue tocilizumab if infection is diagnosed and adequately treated.
- Monitor lipid levels every 4–8 weeks following initiation of therapy, then at 6-month intervals. May cause ↑ total cholesterol, triglycerides, LDL cholesterol, and/or HDL cholesterol.

Implementation
- Administer a tuberculin skin test prior to administration of tocilizumab. Patients with latent TB should be treated for TB prior to therapy.
- Immunizations should be current prior to initiating therapy. Patients on tocilizumab may receive concurrent vaccinations, except for live vaccines. Administer a tuberculin skin test prior to administration of tocilizumab. Patients with latent TB should be treated for TB prior to therapy.
- Do not administer solutions that are discolored or contain particulate matter. Discontinue tocilizumab if infection is diagnosed and adequately treated.
- Other DMARDs should be continued during tocilizumab therapy.
- Children: Do not change dose based on single visit weight; weight fluctuates.
- Subcut: Only for adult patients with RA. Solution is clear and colorless to pale yellow; do not administer solutions that are discolored or contain particulate matter. Rotate injection sites; avoid sites with moles, scars, areas where skin is tender, bruised, red, hard, or not intact.

Potential Nursing Diagnoses

Chronic pain (Indications) Risk for infection (Adverse Reactions)

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tocilizumab

IV Administration

● Intermittent Infusion: Diluent: Withdraw volume of 0.9% NaCl from a 100 mL bag (50 mL bag for children 30 kg) equal to volume of solution required for patient's dose. Slowly add tocilizumab from each vial into infusion bag. Invert slowly to mix, avoid foaming. Do not dilute solutions that are discolored or contain particulate matter. Diluted solution is stable for 24 hr if refrigerated or at room temperature; protect from light. Solution is stable in room temperature for 24 hr. Do not administer via IV push or bolus.

● Y-Site Incompatibility: Do not infuse concurrently in the same line with other drugs.

Patient/Family Teaching

● Instruct patient on the purpose for tocilizumab. If dose is missed, contact health care professional to schedule next infusion. Instruct patient and caregiver in correct technique for subcut injections and care and disposal of equipment.

● Caution patient to notify health care professional immediately if signs of infection (fever, sweating, chills, muscle aches, cough, shortness of breath, blood in phlegm, weight loss, warm, red or painful skin or sores, diarrhea or stomach pain, burning on urination, urinary frequency, feeling tired), fever and stomach-area pain that does not go away, change bowel habits, severe rash, swollen face, or difficulty breathing occurs while taking. If signs and symptoms of anaphylaxis occur, discontinue injections and notify health care professional immediately.

● Instruct patient to notify health care professional of all Rx or OTC medications, vitamins, or herbal products being taken and consult health care professional before taking any new medications.

● Instruct patient to notify health care professional of medication regimen prior to treatment or surgery.

● Advise female patients to notify health care professional if pregnancy is planned or suspected or if breast feeding. Pregnant women should be encouraged to participate in the pregnancy registry by calling 1-877-311-8972.

Evaluation/Desired Outcomes

● Decreased pain and swelling with decreased rate of joint destruction in patients with rheumatoid arthritis, systemic idiopathic juvenile arthritis, or polyarticular juvenile idiopathic arthritis.

Why was this drug prescribed for your patient?