**tositumomab (1131 tositumomab)**

*(to-si-too-mo-mab)*

**Bexxar**

**Classification**

Therapeutic: antineoplastics

Pharmacologic: monoclonal antibodies (radiolabeled monoclonal antibodies)

**Pregnancy Category X**

**Indications**

CD20 positive, follicular, non-Hodgkin's lymphoma refractory to rituximab and in relapse.

**Action**

Binds to CD20 antigens on the surface of specific lymphocytes producing antibody-mediated cytotoxicity and cell death due to ionizing radiation.

**Therapeutic Effects:**

Sustained depletion of CD20 lymphocytes, with decreased progression of lymphoma.

**Pharmacokinetics**

**Absorption:** IV administration results in complete bioavailability.

**Distribution:** Unknown.

**Metabolism and Excretion:** Excreted primarily by kidneys.

**Half-life:** Unknown.

**TIME/ACTION PROFILE (depletion of lymphocytes)**

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**Contraindications/Precautions**

**Contraindicated in:** Hypersensitivity to murine (mouse) proteins; OB, Lactation: Pregnancy or lactation; Intolerance to thyroid blocking agents (these agents are required concurrently).

**Use Cautiously in:**

- 25% lymphoma marrow involvement, platelet count <100,000 cells/mm³, neutrophil count <15,000 cells/mm³ (safety not established).
- Presence of human anti-mouse antibodies (HAMA; q risk of serious hypersensitivity including anaphylaxis).
- Impaired renal function.
- Pedi: Safety not established.

**Adverse Reactions/Side Effects**

**CNS:** dizziness, drowsiness, headache, weakness.

**CV:** edema, hypotension.

**GI:** abdominal pain, diarrhea, nausea, vomiting.

**Endo:** hypothyroidism.

**Hemat:** neutropenia, thrombocytopenia, anemia.

**Metab:** weight loss.

**MS:** arthralgia, back pain, myalgia, neck pain.

**Misc:** hypersensitivity reactions including anaphylaxis, infusional toxicity, fever, pain, secondary malignancies.

**Interactions**

**Drug-Drug:** May increase response to and risk of adverse reactions to live-virus vaccines. Anticoagulants or agents interfering with platelet function may increase risk of bleeding.

**Route/Dosage**

Pretreatment with thyroid blocking agents and premedication to prevent infusional reactions is required.

**IV (Adults):**

**Dosimetric step**—tositumomab 450 mg and Iodine I 131 tositumomab (containing 5 mCi I-131 and 35 mg tositumomab), followed 7–14 days later by therapeutic step.

**Therapeutic step**—tositumomab 450 mg and Iodine I 131 tositumomab (dose calculated by formulae and information provided with packaging); administer only if biodistribution is not altered.

**NURSING IMPLICATIONS**

**Assessment**

- Observe patient for signs and symptoms of anaphylaxis (rash, pruritus, laryngeal edema, wheezing). Discontinue drug and notify health care professional immediately if these symptoms occur. Keep epinephrine, an antihistamine, and resuscitation equipment close by in case of an anaphylactic reaction.

- Monitor for infusional toxicity (fever, rigors, chills, sweating, hypotension, dyspnea, bronchospasm, nausea) during or within 48 hr of infusion; may also occur within 14 days of dosimetric dose. May pretreat with acetaminophen 650 mg and diphenhydramine 50 mg PO 30 min prior to dosimetric step. If infusional toxicity occurs, slow and/or temporarily interrupt infusion.

- Monitor for unusual toxicity (fever, rigors, chills, sweating, hypotension, dizziness, bronchospasm, nausea) during or within 48 hr of infusion; may also occur within 14 days of dosimetric dose. May pretreat with acetaminophen 650 mg and diphenhydramine 50 mg PO 30 min prior to dosimetric and therapeutic steps. If unusual toxicity occurs, slow and/or temporarily interrupt infusion.
Monitor for signs of hypothyroidism (bradycardia, weight gain, lethargy) periodically during therapy.

**Lab Test Considerations:**
- Monitor CBC prior to and at least weekly for at least 10–12 wks or until severe cytopenias have resolved. May cause thrombocytopenia, neutropenia, and anemia lasting 30–90 days with a nadir in 4–7 wks. If lymphoma marrow involvement is >25%, platelet count is <100,000 cells/mm³ or neutrophil count is <500 cells/mm³, re-evaluate use of tositumomab.
- May cause hypothyroidism. Monitor serum TSH levels before treatment and annually thereafter.
- Monitor serum creatinine levels immediately prior to administration.

**Potential Nursing Diagnoses**
- Risk for injury (Adverse Reactions)

**Implementation**
- Tositumomab should be used only by health care professionals qualified by training in the safe use of therapeutic radionuclides.
- All patients must receive thyroid blocking agents; patients unable to tolerate thyroid blocking agents should not receive tositumomab.
- Reduce infusion rate by 50% for mild to moderate infusional toxicity; interrupt infusion for severe infusional toxicity. When symptoms have resolved, resume rate at 50%.

**IV Administration**
- **Diluent:** Dilute tositumomab 450 mg in 50 mL of 0.9% NaCl. Concentration will be 9 mg/mL. Solution should be clear to opalescent and colorless to slightly yellow. Administer via IV tubing set with a 0.22 micron filter. Same IV tubing set and filter must be used throughout entire dosimetric or therapeutic step. Change in filter can result in loss of drug. Rate: Administer over 60 min.
- **Dilute iodine I 131 tositumomab** in 30 mL of 0.9% NaCl.
- **Rate:** Administer over 20 min.

**Patient/Family Teaching**
- Inform patient that they will have a radioactive material in their body for several days after discharge from hospital. Provide patient with verbal and written instructions for minimizing exposure to family, friends, and general public.
- Advise patient to use effective contraception for 12 mo following administration. Advise patient not to breast-feed during this time.
- Instruct patient to notify health care professionals promptly if fever; chills; cough; hoarseness; sore throat; signs of infection; lower back or side pain; painful or difficult urination; bleeding gums; bruising; petechiae; blood in stools, urine, or emesis; increased fatigue; dyspnea; or orthostatic hypotension occurs. Caution patient to avoid crowds and persons with known infections. Instruct patient to use soft toothbrush and electric razor and to avoid falls. Caution patient not to drink alcoholic beverages or take medication containing aspirin or NSAIDs, may precipitate gastric bleeding. Explain the need for frequent monitoring.
- Instruct patient to avoid driving or other activities requiring alertness until response to medication is known.
- Emphasize the importance of adherence with thyroid blocking agents and need for long-term monitoring.

**Evaluation/Desired Outcomes**
- Sustained depletion of CD20 lymphocytes, with decreased progression of lymphoma.