

PROTOCOL FOR: ATG: Administration of Anti-thymocyte Globulin (ATG)

SUPPORTIVE DATA: ATG is an immunoglobulin (IgG) and lymphocyte-selective (T-lymphocytes) immunosuppressant derived from healthy horse or rabbit serum.

Its mechanism of action is unclear. It is thought that ATG non-specifically binds to circulating cytotoxic T-lymphocytes (killer cells), alters their formation and decreases their number. T-lymphocytes are responsible for initiating graft-vs-host disease (GVHD) and graft rejection in BMT recipients. ATG is used in bone marrow transplantation for:

1. Immunosuppression prior to BMT (ATG is sometimes used in the conditioning phase for second transplants done for graft rejection).
2. Treatment of graft-vs-host disease.
3. Prevention of graft rejection.
4. Treatment of Aplastic Anemia: ATG produces a hematopoietic response in some patients with aplastic anemia. Therefore, it may be used to treat moderate to severe aplastic anemia in patients without a matched donor.

DESIRED PATIENT

OUTCOMES:

1. Patient will maintain maximum level of comfort as demonstrated by absence of or minimal:
 - a. fever, chills, rigors
 - b. trauma, injury or bleeding associated with ATG induced thrombocytopenia
 - c. infection associated with ATG induced leukopenia
 - d. phlebitis, thrombosis or pain along infusion site

CLINICAL
ASSESSMENT
AND CARE:

1. Pre-ATG Administration
 - a. Premedicate with antipyretic, antihistamine and/or corticosteroid as ordered by physician.
 - b. Obtain baseline vital signs.
2. Have Emergency Equipment at Bedside and Fully Functioning:
 - a. Oral airway
 - b. Suction apparatus with tubing and suction catheter attached

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- c. Oxygen flowmeter with tubing and nasal prongs or face mask attached
- 3. Have Emergency Medications at Bedside
 - a. Epinephrine
 - b. Hydrocortisone
 - c. IV Benadryl
 - d. (Vasopressors readily available)
- 4. ATG Administration
 - a. Infuse ATG through a central venous catheter.
 - b. Do not piggyback ATG into any other solution.
 - c. Use 0.2 micron in-line filter to remove aggregates.
 - d. Infuse slowly over first hour (usually 5-10% of the dose is given over the first hour). Consult with physician to determine first hour's rate.
 - e. ATG is usually infused over 4-8 hours, the MD will write specific orders.
- 5. Vital Signs
 - a. Monitor vital signs immediately prior to infusion, every 15 minutes during the first hour of infusion, then every hour for the remainder of the infusion.
- 6. Treatment of Anaphylaxis - Monitor patient for signs and symptoms of anaphylaxis (please refer to Acute Side Effects section).

If signs and symptoms of anaphylaxis develop:

- a) stop ATG infusion immediately
- b) notify physician
- c) infuse normal saline per MD order
- d) administer antihistamines, epinephrine
- e) be prepared to provide resuscitative measures

TREATMENT OF
SIDE EFFECTS:

- 1. Fever, Chills, Rigors
 - a. Monitor patient for elevated temperature, fever and chills.
 - b. If fever, chills and/or rigors develop:
 - 1) notify physician
 - 2) administer antipyretics, antihistamines, corticosteroids and/or narcotics as ordered by physician
 - 3) provide additional blankets
- 2. Thrombocytopenia
 - a. Monitor platelet count.
 - b. Consult with physician regarding platelet transfusions following ATG administration.

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- c. Patient care per thrombocytopenia protocol.
- 3. Neutropenia
 - a. Monitor daily white blood cell count.
 - b. Assess patient for signs and symptoms of infection.
 - c. Assess oral cavity for signs and symptoms of mucositis.
 - d. Patient care per neutropenia protocol.
- 4. Serum Sickness
 - a. Observe for signs and symptoms of serum sickness (please refer to Serum Sickness section).
 - b. Document and notify physician if signs and symptoms of serum sickness appear.
 - c. Administer antihistamines, corticosteroids, antipyretics and analgesics as ordered by physician.
 - d. Provide comfort measures to relieve symptom distress.
- 5. Hives & Itching or chest, back or flank pain
 - a. Stop ATG infusion, begin IVF
 - b. Notify MD
 - c. Restart upon MD approval.

ACUTE
SIDE EFFECTS:

- Acute side effects include:
- 1. Fever and chills
 - 2. Bone marrow depression (especially thrombocytopenia)
 - 3. Skin manifestations: (incidence rate 13%)
 - a. itching
 - b. skin rash
 - c. erythema
 - d. urticaria
 - 4. Anaphylaxis: (incidence rate 1-2%)
 - a. restlessness
 - b. dyspnea
 - c. bronchospasm
 - d. tachycardia
 - e. hypotension
 - 5. Phlebitis, thrombosis or pain along infusion site

OTHER SIDE
EFFECTS:

- Other side effects include:
- 1. Nausea and vomiting
 - 2. Arthralgias and myalgias
 - 3. Chest or back pain
 - 4. Stomatitis
 - 5. Epigastric pain
 - 6. Headache
 - 7. Serum sickness

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SERUM SICKNESS: About 75% of patients who receive ATG develop serum sickness 7-18 days after administration.

Signs and symptoms of serum sickness include: fever, chills, malaise, arthralgias, lymphadenopathy, nausea and vomiting and a skin rash. The skin rash associated with the serum sickness may appear around day 10 of therapy. It classically starts as asymptomatic, erythematous patches in the axillae, peri-umbilical area and in the groin. It may rapidly become generalized, erythematous and confluent. Characteristically, a progressive erythema may occur in the palms, fingers, feet and toes.

The treatment for the serum sickness includes corticosteroids, antihistamine, analgesics and comfort measures for symptom relief.

Serum sickness is transient and its damage is reversible.

PATIENT TEACHING:

1. Explain to patient/family rationale for ATG therapy.
2. Review schedule of ATG administration.
3. Review potential side effects of ATG and intervention manage them.
4. Instruct patient to notify health care profession if any side effects occur.

DOCUMENTATION:

1. Document assessment findings and nursing interventions on Oncology 6 flowsheets, MAR and Infusion Record.
2. Document patient response to care in the patient progress notes using focus note format per Department of Nursing Standards.

APPROVALS: Nursing Standards Committee

EFFECTIVE DATE: 10/89

REVISION DATE: 10/90, 6/92, 8/96, 3/99, 10/00/, 4/01, 3/02