Transfusion Guidelines in AIHA; Indications, Compatibility Testing and Administration.

Lawrence D. Petz, M.D.
Emeritus Professor
University of California
Los Angeles, California, U.S.A.;

Medical Director
StemCyte International Cord Blood Center
Covina, California, U.S.A.

IMPORTANT PRINCIPLES

- Indications for transfusion are not significantly different than for similarly anemic patients without AIHA.
- Specialized laboratory procedures are necessary.
- Communication between laboratory personnel and clinicians is critical.

Indications for Transfusion in AIHA

Acutely ill patients - severe hemolysis

- Presence of fever, malaise, pain in back, abdomen and legs.
- Hemoglobinuria and hemoglobinemia.
- Neurologic symptoms (lethargy, mental confusion)
- Hemoglobin measurements every 12-24 hours.
- RBCs are urgently needed and must not be withheld because of serologic incompatibility.

Indications for Transfusion in AIHA

Patients with less severe hemolysis.

- If hemoglobin level above 8 gm/dL, transfusion usually not indicated.
- If hemoglobin level is 5-8 gm/dL, evaluate symptoms and stability of hemoglobin levels.
- If only mild symptoms are present (decrease in exercise tolerance, palpitations, fatigue) and hemoglobin levels are stable, it is appropriate to withhold transfusion.
- If hemoglobin is <5 gm/dL, transfusion is generally indicated.

Communication Between Clinician and Transfusion Service

Responsibilities of Transfusion Service

- Perhaps initiate communication.
- Indicate extent of compatibility testing performed, e.g., auto- or alloadsorption.
- Clinician should be assured that, after appropriate compatibility testing, an acute hemolytic transfusion reaction is unlikely.
- Indicate that RBCs will cause temporary benefit even if they do not survive normally because of the patient's autoantibody.

Communication Between Clinician and Transfusion Service

Responsibilities of Clinician

- Indicate urgency of transfusion.
- Understand principles of compatibility testing.
- Seek assurance that appropriate compatibility testing is to be performed.

Communication Between Clinician and Transfusion Service

Provide information to clinician:

"A Physician's Guide to Transfusion in Autoimmune Haemolytic Anaemia."

Petz LD. *Brit J Haematology* 2004;124: 712-716.

For reprint send mailing address to lpetz@stemcyte.com

Indications for Transfusion

- A common mistake is reluctance to transfuse patients with AIHA.
- If appropriate compatibility procedures are performed, survival of transfused RBCs is generally about as good as that of the patient's own RBCs.
- Significant temporary benefit is to be expected.
- Patients should not be denied transfusion because of a RBC autoantibody.

Compatibility Testing in Warm Antibody AIHA

Most critical is the detection and identification of alloantibodies even in the presence of broadly reactive autoantibodies.

Specialized Compatibility Test Procedures

Comparison of DAT and IAT.

If the indirect antiglobulin test (IAT) is significantly stronger than the direct antiglobulin test (DAT), the presence of an alloantibody is likely.

Specialized Compatibility Test Procedures

Testing patient's serum against a RBC panel.

An alloantibody may be detected but only if it reacts more strongly than the autoantibody.

Adsorption Procedures

- **Warm autoadsorption is the optimal procedure for alloantibody detection.**
  - **One should obtain adequate volumes of patient's RBCs to perform the procedure.**
  - **RBCs should be retained for subsequent procedures.**
  - **The number of autoadsorptions needed is variable depending on the strength of the IAT.**
  - **Autoadsorption is not reliable in a recently transfused patient.**

Allogeneic Adsorption

The optimal procedure for detection of alloantibodies is alloadsorption:

1. **If patient's RBCs are not available for autoadsoprtion.**
2. **If the patient has been transfused recently, and if the patient's pre-transfusion RBCs are not available for autoadsorption.**

Allogeneic Adsorption

- Transfusion services should plan ahead.
  - Samples of phenotyped RBCs should be stored in frozen or liquid state.
  - Three samples are generally adequate: R_1R_1, R_2R_2 and rr, with one sample being Jk(a-) and one Jk(b-).

Transfusion of Phenotypically Matched RBCs

- Typing must be performed for numerous RBC antigens (D, C, E, c, e, K, Jk^a, Fy^a, Fy^b, S and s).
- Technically difficult or impossible if DAT is strongly positive.
- Partial phenotyping (e.g., Rh, K and Jk^a) would provide limited protection and does not preclude necessity of adsorption studies.
- Blood supplier must be able to supply extensively phenotyped units.

Cold Antibody AIHA

- Perform compatibility tests at 37ºC.
- In a small percentage of patients, cold autoadsorption may be necessary.
- Allogeneic adsorptions can also be performed, but are rarely necessary.

“Least Incompatible” Units

- “Least incompatible” is not defined in the medical literature and is used differently by different transfusion medicine professionals.
- One definition is the selection of weaker reacting units from a number of ABO compatible units, without further compatibility testing.

“Least Incompatible” Units

- Use of the term in discussion with clinicians does not convey any meaningful information and can lead only to confusion.
- A lack of confidence in the safety of units selected by the transfusion service may lead to avoiding transfusion in a situation where transfusion is needed.

“Least Incompatible” Units

- **“Least incompatible” units for transfusion in autoimmune hemolytic anemia: should we eliminate this meaningless term? A commentary for clinicians and transfusion medicine professionals.**

Petz LD TRANSFUSION 2003;43:1503-1507

When the Transfusion is Urgent

- Check history for previous transfusions and pregnancies.
- Quickest but least reliable procedures are dilution techniques and partial phenotyping.
- Warm autoadsorption is highly effective.
- Alloadsorption is time consuming but usually practical with advance planning.

Optimal Volume of Blood to Transfuse

- Aggressive transfusion may be dangerous.
- If anemia is severe (hematocrit 10-15%; hemoglobin 3.5 – 5.0 gm/dL) transfusing to a level above 10 gm/dL may precipitate cardiac symptoms in the elderly or if cardiac reserve is reduced.
- The increase in RBC volume may precipitate posttransfusion hemoglobinuria.
- Transfusion up to a hemoglobin level of 8 gm/dL or less is appropriate.

CONCLUSIONS

- Clinicians are often reluctant to transfuse patients with AIHA.
- Modern compatibility testing, especially use of adsorption techniques, allows detection of alloantibodies.
- Indications for transfusion of a patient with AIHA are not significantly different from comparably anemic patients without AIHA.
- Communication between transfusion service and clinicians is valuable.

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