

Anti-thymocyte globulin (ATG) - Full Clinical Guideline

Reference no.:CG-REN/2023/001

1. Introduction

ATG is a rabbit polyclonal antibody used for the prophylaxis of rejection and the treatment of steroid resistant rejection. It is irritant to peripheral veins and must be given via a central line (or occasionally through a fistula) as it causes thrombophlebitis.

2. Aim and Purpose

Guideline to be used on the renal unit only at the recommendation of the Renal consultant.

3. Definitions, Keywords

ATG (Anti-Thymocyte globulin)

NHSBT (NHS blood and Transplant)

4. Use of ATG for the Treatment of Kidney transplant rejection

The decision to initiate and prescribe ATG needs to be agreed with both the Renal Consultant and Pharmacist.

Contra-indications

Use of ATG is contraindicated in patients with a history of allergy or anaphylaxis to rabbit proteins, or those who have acute infective (bacterial, viral or fungal) illness.

Modification of Immunosuppression During Therapy

- Continue 20mg prednisolone daily
- Stop azathioprine, mycophenolate mofetil and sirolimus for the duration of the ATG course. Restart ATG only when total WCC > 4.0 x10⁹/l.
- Discuss reduction of ciclosporin or tacrolimus dose with consultant (normally half the dose or withhold for the duration of ATG, to be reinstated the day after last dose)).

Irradiated blood products should be given if required during, or at any time after, ATG treatment because of the risk of transfusion associated GVHD. Patients should be given a card and the NHSBT information leaflet explaining this – see [0298.pdf \(esht.nhs.uk\)](#)

Preparation

Obtain central venous access (ideally via internal jugular route). ATG can occasionally be given via a fistula, however subsequent thrombophlebitis may compromise the fistula and this route should only be used after discussion at consultant level.

Supply

ATG must be manufactured in a negative pressure isolator in the oncology aseptic satellites. Supply of ATG out of hours is not feasible as it is unlikely that the staff trained to prepare in such conditions will be present. Weekdays have a 15:00 cut off time, whilst weekends have a 11:00 am cut off time.

Given the expensive nature of the product, it may not always be in stock and would require ordering in from the supplier.

Administer Test Dose

Prior to giving the test dose 2x baseline EDTA sample should be taken and sent to Haematology with the first post full dose sample (see monitoring below).

One ml of ATG (5mg) is mixed with 100ml 0.9% normal saline and given.

- The purpose of the test dose is to see if the patient develops anaphylaxis. The signs of anaphylaxis are tingling in the extremities and around the mouth, swelling of the lips and larynx, bronchospasm, urgency of defaecation and hypotension.
- Vital signs (TPR, RR, O2 sats and BP) should be monitored every 15 minutes during the test dose infusion.
- A doctor should be present throughout the administration of the test dose and any reaction should be treated with oxygen, 100mg hydrocortisone IV, 10mg chlorpheniramine IV and adrenaline given intramuscularly in a dose of 0.5-1mg (0.5-1ml adrenaline injection 1:1000). **Do not give before the test dose as it may mask any anaphylactic reaction.**

A severe reaction or anaphylaxis to the test dose is a contraindication to the therapeutic course.

Administering Full Dose ATG

Prescribe premedication and adjuncts

- 100mg hydrocortisone IV, 10mg chlorpheniramine IV and 1g paracetamol orally to be given 60 minutes prior to each dose,
- Cotrimoxazole 480mg OD (dose to be reduced to alternative days if eGFR <30) for the duration of the course and 6months after.
- Nystatin suspension (1ml QDS) for duration of the course.
- Oral valganciclovir for 3 - 6 months (unless both recipient and donor CMV negative D-/R-). Adjust dose of valganciclovir depending on renal function (see CMV protocol) and FBC (see below).

Prescribe main infusion

- The initial main infusion should be 1.5 mg/kg dissolved in 250-500ml of 0.9% normal saline (maximum concentration 1mg/2mls) infused centrally over 12 hours with a 0.22 micron filter.
- Measure and record vital signs (mentioned above) immediately prior to initiating infusion, every 15 minutes for the first hour, and every 30 minutes for next hour and then hourly until the infusion is complete.
- A course usually lasts 7-14 days (cumulative dose 7.5 – 10.5mg/kg). It is advisable to give the first few doses over a longer period, subsequent doses can be given quicker as long as it is given over at least 6 hours.

Monitoring ATG Therapy

Absolute CD3 counts are used to monitor ATG therapy.

- Please ensure the Special Haematology lab are aware that there is a patient about to commence ATG therapy so the necessary arrangements can be made to deal with samples quickly and efficiently. Telephone the lab on ext 89386 and email gail.ford1@nhs.net and uhdb.specialhaematology@nhs.net.
- 2x urgent EDTA sample need to be taken between 8-9am, every day Monday-Friday and sent up to Pathology straight away.
- Please enter "CD4 immune monitoring" and in diagnosis please state "CD3 count only please for ATG treatment, attn Gail Ford"
- The blood will either be tested locally and/or dispatched immediately via a taxi to the Immunology Laboratory at QMC.
- Pharmacy also needs to be informed as early as possible if ATG will be required for that day, but that will depend on when the CD3 count is available.
- Monitor daily FBC/CRP and monitor for signs of infection and response to treatment.

Modification of ATG dose

The best indicator of optimal immunosuppression is the maintenance of the absolute CD3 count below $0.05 \times 10^9/l$.

Subsequent dose of ATG should be modified according to the following criteria: -

Omit ATG if any one of the following criteria is met:

- Absolute number of CD3 positive cells is $< 0.050 \times 10^9/L$
- OR Platelet count $< 50 \times 10^9/L$
- OR Total WBC $< 4.0 \times 10^9/L$

Give half dose ATG (0.75mg/kg) if any one of the following criteria is met:

- Absolute number of CD3 positive cells is between $0.051-0.079 \times 10^9/L$
- OR Platelet count between $51-75 \times 10^9/L$
- OR Total WBC is between $4.1-5.0 \times 10^9/L$

Otherwise give full dose.

If CD3 monitoring is not available e.g. at the weekend, then the aim is to maintain the total lymphocyte count below 3% of the total white blood cell count.

NB: ATG (Thymoglobuline) can be given as a repeated course.

5. References (including any links to NICE Guidance etc.)

[Thymoglobuline 25 mg powder for solution for infusion - Summary of Product Characteristics \(SmPC\) - \(emc\) \(medicines.org.uk\)](#)

[Injectable Medicines Guide - Display - Antithymocyte immunoglobulin \(rabbit\) - Intravenous - Version 6 - IVGuideDisplayMain.asp \(wales.nhs.uk\)](#)

6. Documentation Controls

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