Presentation Category: Original - Research Complete

Abstract Title

Determination of optimal anti-thymocyte globulin dose for renal transplant induction

Learning Objective

Describe efficacy and safety of risk-stratified rATG and basiliximab induction agent selection and dosing

Abstract

Purpose

Induction immunosuppression plays an integral role in preventing rejection in renal transplantation. Rabbit anti-thymocyte globulin (rATG) and basiliximab are commonly used induction agents. rATG has increased efficacy in preventing rejection but also increased risks of infection and malignancy compared to basiliximab. All renal transplant recipients at our center receive induction immunosuppression with either rATG or basiliximab. Previously, rATG was given at a fixed cumulative dose of 6 mg/kg but now our program has moved to a risk-stratified dosing model of 3 mg/kg, 4.5 mg/kg, or 6 mg/kg based on immunologic and infectious risk factors. This process has been primarily transplant provider-driven and not yet formalized. This quality improvement study seeks to standardize institutional induction agent selection and dosing by evaluating efficacy and safety of risk-stratified rATG and basiliximab induction.

Methods

This retrospective, single-center, quality improvement study at UChicago Medicine aims to formalize institutional renal transplant induction agent selection and dosing. Adult recipients of an isolated renal transplant at our center from January 1, 2021 to December 31, 2022 were eligible. Patients who received both rATG and basiliximab induction were excluded. The primary outcome is to evaluate differences in patient characteristics and risk factors among induction groups. These include age at time of transplant, HLA mismatch, malignancy history, and transplant history among others. Secondary endpoints are the incidence of biopsy-proven acute rejection, BK viremia requiring intervention, and patient survival at 1-year post-transplant.

Results

A total of 182 patients were included. Patients were stratified into four induction groups: rATG 3 mg/kg (n=33), rATG 4.5 mg/kg (n=64), rATG 6 mg/kg (n=42), and basiliximab (n=43). Patients who received rATG 6 mg/kg were younger than those who received rATG 3 mg/kg (median age: 47 years versus 64 years) or basiliximab (median age: 66 years) ($p < 0.001$). All patients who received basiliximab had a cPRA < 30%. Previous renal transplant recipients were more likely to receive rATG 6 mg/kg compared to basiliximab ($p=0.001$) for a subsequent transplant.

Patients who received basiliximab induction had a higher rate of biopsy-proven acute rejection compared to rATG induction of any dose (basiliximab: 14%, rATG 3 mg/kg: 0%, rATG 4.5 mg/kg: 3.1%, rATG 6 mg/kg: 0%). BK viremia requiring intervention occurred in 14.8% of all patients and was not significantly different among groups. Patient survival was not significantly different among groups.

Conclusions

The majority of isolated renal transplant recipients at our center receive rATG induction. Biopsy-proven acute rejection rates were higher in patients who received basiliximab, however, infectious

complications and patient survival were not different. A patient-specific, risk-stratified approach to renal transplant induction is both safe and effective without compromising patient survival.

Submitting Author: Phi-Linh Nguyen
Organization: University of Chicago Medicine
Authors:
Brenna Kane, PharmD, BCPS, Clinical Pharmacy Specialist - Solid Organ Transplantation, University of Chicago Medicine
Sambhavi Krishnamoorthy, MD, MBBS, Solid Organ Transplantation Specialist, University of Chicago Medicine
Beatrice P Concepcion, MD, Solid Organ Transplantation Specialist, University of Chicago Medicine
Rolf N Barth, MD, Director of Liver, Kidney, and Pancreas Transplantation, University of Chicago Medicine
Derek Owen, PharmD, BCTXP, Clinical Pharmacy Specialist - Solid Organ Transplantation, University of Chicago Medicine