

# Your membership matters.

Continue to help lead the fight against kidney disease. Renew today.

[www.asn-online.org/membership](http://www.asn-online.org/membership)



# CJASN

Clinical Journal of the  
American Society of Nephrology

[HOME](#) | [CURRENT ISSUE](#) | [ADVERTISE](#) | [SUBSCRIBE](#) | [ARCHIVES](#) | [FEEDBACK](#) | [ALERTS](#) | [HELP](#)

User Name

Password

LOG-IN

Search

Go

Advanced Search

## CMV and BKPyV Infections in Renal Transplant Recipients Receiving an mTOR Inhibitor-Based Regimen Versus a CNI-Based Regimen: A Systematic Review and Meta-Analysis of Randomized, Controlled Trials

Samir G. Mallat<sup>\*</sup>, Bassem Y. Tanios<sup>\*</sup>, Houssam S. Itani<sup>†</sup>, Tamara Lotfi<sup>‡</sup>,  
Ciaran McMullan<sup>§</sup>, Steven Gabardi<sup>§</sup>, Elie A. Akl<sup>||,¶</sup>, Jamil R. Azzi<sup>§</sup>

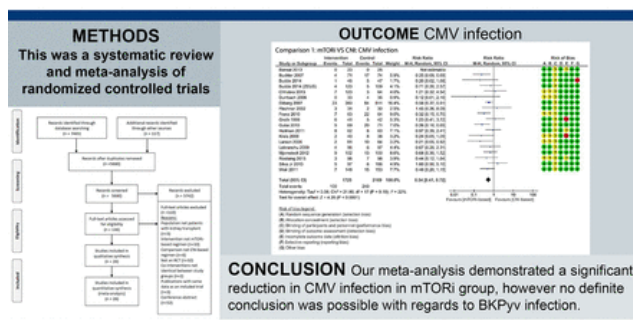
Author Affiliations

### Correspondence:

Dr. Bassem Y. Tanios, American University of Beirut Medical Center, Department of Internal Medicine, Division of Nephrology, P.O.Box 11-0236 Riad El-Solh/Beirut 1107 2020 Lebanon, or Dr. Jamil R. Azzi, Renal Division, Brigham and Women's Hospital, Harvard Medical School, 45 Francis Street, ASB-II Boston, MA 02115. Email: [bt08@aub.edu.lb](mailto:bt08@aub.edu.lb) or [jazzi@rics.bwh.harvard.edu](mailto:jazzi@rics.bwh.harvard.edu)

### Visual Overview

CMV and BKPyV Infections in Renal Transplant Recipients Receiving an mTOR Inhibitor-Based Regimen Versus a CNI-Based Regimen: A Systematic Review and Meta-Analysis of Randomized Controlled Trials



Samir G. Mallat, Bassem Y. Tanios, Houssam S. Itani, Tamara Lotfi, Ciaran McMullan, Steven Gabardi, Elie A. Akl, and Jamil R. Azzi. CMV and BKPyV Infections in Renal Transplant Recipients Receiving an mTOR Inhibitor-Based Regimen Versus a CNI-Based Regimen: A Systematic Review and Meta-Analysis of Randomized, Controlled Trials. CJASN 13:2212-16; published ahead of print June 2, 2017. doi:10.2215/CJN.13221216

**CJASN**  
Clinical Journal of the American Society of Nephrology

### Abstract

**Background and objectives** The objective of this meta-analysis is to compare the incidences of cytomegalovirus and BK polyoma virus infections in renal transplant recipients receiving a mammalian target of rapamycin inhibitor (mTOR)-based regimen compared with a calcineurin inhibitor-based regimen.

**Design, setting, participants, & measurements** We conducted a comprehensive search for randomized, controlled trials up to January of 2016 addressing our objective. Other outcomes included acute rejection, graft loss, serious adverse events, proteinuria, wound-healing complications, and eGFR. Two review authors selected eligible studies, abstracted data, and assessed risk of bias. We assessed quality of evidence using the Grading of Recommendations Assessment, Development and Evaluation methodology.

**Results** We included 28 randomized, controlled trials with 6211 participants classified into comparison 1: mTOR inhibitor versus calcineurin inhibitor and comparison 2: mTOR inhibitor plus reduced dose of calcineurin inhibitor versus regular dose of calcineurin inhibitor. Results showed decreased incidence of cytomegalovirus infection in mTOR inhibitor-based group in both comparison 1 (risk ratio, 0.54; 95% confidence interval, 0.41 to 0.72), with high quality of

« Previous | Next Article »  
Table of Contents

### This Article

Published online before  
print June 2017, doi:  
10.2215/CJN.13221216  
CJASN August 07, 2017  
vol. 12 no. 8 1321-1336

» Abstract Free

Figures Only

Full Text

Full Text (PDF)

Supplemental Data

Article Usage Stats

Article Usage Statistics



### Services

Email this article to a  
colleague

Alert me when this article is  
cited

Alert me if a correction is  
posted

Similar articles in this journal

Similar articles in PubMed

Download to citation manager

© Get Permissions

Citing Articles

Google Scholar

PubMed

### Current Issue

March 07, 2018, 13 (3)



Alert me to new issues of  
CJASN

### ONLINE SUBMISSION

### AUTHOR RESOURCES

### ABOUT CJASN

### EDITORIAL BOARD

### REPRINTS/PERMISSIONS

### IMPACT FACTOR

### MOST READ

### MOST CITED

**CJASN ePress**

Updated on:  
March 9, 2018  
By Date / By Subject



Advertising Disclaimer

evidence, and comparison 2 (risk ratio, 0.43; 95% confidence interval, 0.24 to 0.80), with moderate quality of evidence. The available evidence neither confirmed nor ruled out a reduction of BK polyoma virus infection in mTOR inhibitor-based group in both comparisons. Secondary outcomes revealed more serious adverse events and acute rejections in mTOR inhibitor-based group in comparison 1 and no difference in comparison 2. There was no difference in graft loss in both comparisons. eGFR was higher in the mTOR inhibitor-based group in comparison 1 (mean difference = 4.07 ml/min per 1.73 m<sup>2</sup>; 95% confidence interval, 1.34 to 6.80) and similar to the calcineurin inhibitor-based group in comparison 2. More proteinuria and wound-healing complications occurred in the mTOR inhibitor-based groups.

**Conclusions** We found moderate- to high-quality evidence of reduced risk of cytomegalovirus infection in renal transplant recipients in the mTOR inhibitor-based compared with the calcineurin inhibitor-based regimen. Our review also suggested that a combination of a mTOR inhibitor and a reduced dose of calcineurin inhibitor may be associated with similar eGFR and rates of acute rejections and serious adverse events compared with a standard calcineurin inhibitor-based regimen at the expense of higher incidence of proteinuria and wound-healing complications.

immunosuppression    cytomegalovirus    Meta-analysis  
 Calcineurin inhibitor    BK virus    cyclosporine    tacrolimus    sirolimus  
 everolimus    Calcineurin    Calcineurin Inhibitors    Confidence Intervals  
 Cytomegalovirus Infections    glomerular filtration rate    Incidence  
 kidney transplantation    Odds Ratio    Polyomavirus    proteinuria  
 Randomized Controlled Trials as Topic    Risk    Assessment    Sirolimus  
 Wound Healing

Received December 26, 2016.

Accepted April 24, 2017.

Copyright © 2017 by the American Society of Nephrology

Copyright © 2018 by the American Society of Nephrology

Be a part of something  
innovative,  
influential  
and dynamic.

**Be a part of ASN.**



ASN members enjoy  
discounts on ASN's  
educational programs,  
subscriptions to ASN's  
publications, and more.

Join or renew today at  
[www.asn-online.org/membership](http://www.asn-online.org/membership)



Print ISSN: 1555-9041  
Online ISSN: 1555-905X