

# Landmark studies in Maintenance Immunosuppression in Kidney Transplantation

Ekberg et al

## CAESAR study

Calcineurin inhibitors (CNI) withdrawal

Low-dose and standard cyclosporine (CsA) showed similar glomerular filtration rate (GFR) rates and lower biopsy-proven acute rejection (BPAR) compared to CSA withdrawal group.

2007



2007

Ekberg et al

## ELITE SYMPHONY

Reduced exposure to CNI

Low-dose tacrolimus (TAC) patients had higher GFR, lower BPAR and increased allograft survival rates compared to other groups.

Gaston et al

## OPTICEPT trial

MMF and CNI-sparing

Mycophenolate mofetil (MMF) in reduced CNI regimens resulted not inferior, low BPAR rates, and higher adverse events compared to standard therapy.

2009



2009

Schena et al

## CONVERT trial

Conversion from CNI to SRL

In selected cases, sirolimus (SRL) conversion had excellent patient and graft survival and no difference in biopsy-confirmed acute rejection (BCAR) compared with CNI.

Weir MR et al

## Spare-the-Nephron

SRL based vs MMF/ CNI regimen

A 2-year regimen of MMF/CNI compared to MMF/SRL treatment resulted in similar measures of renal function but with fewer deaths and a trend to less BPAR and graft loss.

2011



2011

Budden et al

## ZEUS study

Everolimus (EVR)-based with CNI withdrawal

CSA withdrawal to undergo EVR-based regimen improved GFR with higher BPAR, slightly increased urinary protein excretion, and lower hemoglobin concentrations.

Flechner et al

## ORION study

Two SRL-based regimens vs TAC/ MMF

The SRL-based regimens showed similar estimated GFR (eGFR), higher BCAR rates at one year follow up, delayed wound healing and hyperlipidemia.

2012



2014

Chadban et al

## SOCRATES

EVR after steroid or CSA withdrawal

Noninferiority in eGFR, but higher trend towards composite treatment failure (BPAR, graft loss, death, loss to follow-up).

de Fijter et al

## ELEVATE Trial

EVR conversion vs CNI therapy

EVR conversion showed no difference in eGFR after 1 year. However, higher BPAR rates compared to TAC group.

2017



2019

de Fijter et al

## TRANSFORM study

EVR with reduced CNI therapy noninferiority study

EVR + rCNI was non inferior in eGFR and BPAR endpoints. Also, de novo DSA and viral infections were lower compared to standard regimen after 24 months follow up.