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Assessing BeLtacept Against TAcrolimus in renal Transplantation: A systemic review and meta-analysis (A BLATAnT Study)

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Objectives:

The T-cell costimulation blocking agent belatacept has been identified as a possible substitute for calcineurin inhibitors, however, no consensus has been established against its use over the standard care agent Tacrolimus. The present systemic review and meta-analysis have assessed the effectiveness of maintenance immunosuppressive regimens based on belatacept or tacrolimus following renal transplant.

Methods:

Literature search made till 4th November 2017 for randomized control trials (RCTs) comparing the role of belatacept to tacrolimus in renal transplant recipients by searching the PubMed, EMBASE, Cochrane, Crossref, Scopus, clinical trials registry following PROSPERO approval. A random-effects meta-analysis was conducted.

Results:

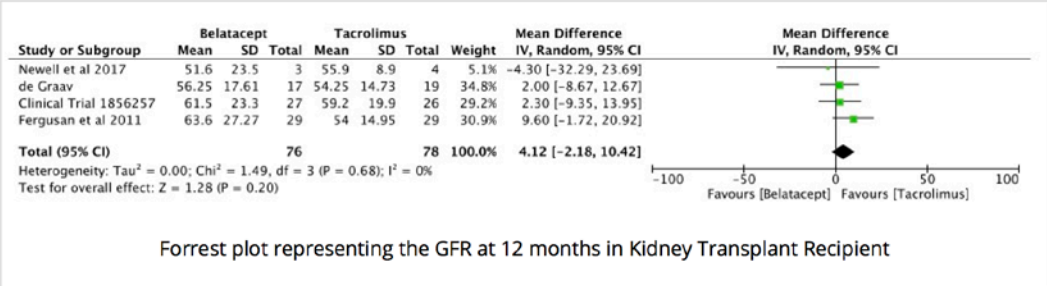
The literature search identified four randomized prospective studies comparing belatacept with tacrolimus. There was no significant difference in estimated renal function(eGFR)at 12 months(mean difference 4.12 ml/min/1.73m2, CI -2.18 to 10.42, P =0.20). Along with that, belatacept group was associated with significant increase in allograft rejection (RR = 5.12,P = 0.00) and worse allograft survival(RR = 5.77,P = 0.02). (Fig 1)

Conclusions:

The evidence reviewed in this meta-analysis suggest that belatacept-based maintenance immunosuppression regimens were associated with an increased risk allograft loss for renal transplant recipients with equivalent renal functioning when compared to tacrolimus.

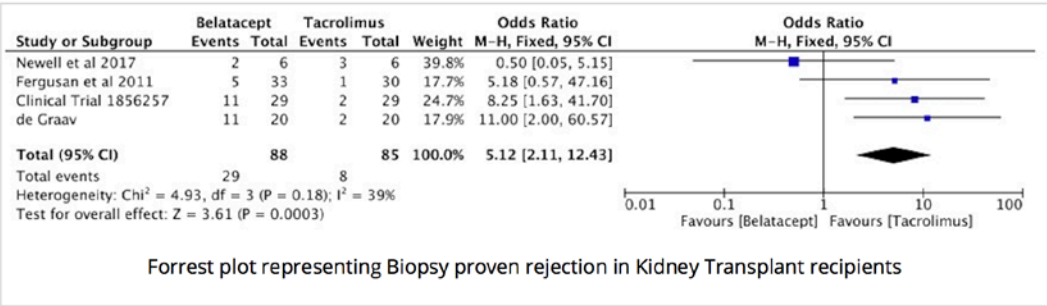
However, an adaptation of belatacept in renal transplantation has been limited by increased rates of rejection and development resistance owing differentiation into various types of effector memory T cells through, parallel differentiation and immunological synapse with plasticity. This forms T cell lack in membrane expression of CD28 following belatacept treatment, which no longer requires co-stimulation and might cross-react with alloantigens. Hence, further studies are required to better elucidate the mechanism of resistance and development of tailored therapeutic strategies involving co-stimulation blockade.

Figure showing GFR and BPAR



Forrest plot representing the GFR at 12 months in Kidney Transplant Recipient

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Forrest plot representing Biopsy proven rejection in Kidney Transplant recipients