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Complement in renal transplantation: The road to translation

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Renal transplantation is the treatment of choice for patients with end-stage renal disease. The important role of the complement system in renal transplantation outcome is widely recognized. Increasing evidence support the role of complement in the different phases of renal transplantation: in the donor, during preservation, in reperfusion and at the time of rejection. Also both local and systemic complement production and complement activation contributing to the pathogenesis of renal transplant injury is reported. With current research projects the complement pathways involved in the different phases of renal transplantation are dissected. These results direct the therapeutic strategies to inhibit complement during the kidney transplantation. Several clinical trials are currently underway to evaluate the therapeutic potential of complement inhibition for the treatment of brain death-induced renal injury, renal ischemia-reperfusion injury and acute rejection. We conclude that it is expected that in the near future, complement-targeted therapeutics will be used clinically in renal transplantation. This will hopefully result in improved renal graft function and increased graft survival.