

3rd ANNUAL KIDNEY CONGRESS & 16th International Conference on **NEPHROLOGY & THERAPEUTICS** October 19-20, 2018 | New York, USA

Antibody-mediated rejection in kidney transplantation

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Antibody-mediated rejection (ABMR) is the most common cause of allograft failure. Acute ABMR occurs in ~ 30% of renal allograft biopsies; ~60% of late allograft dysfunctions are due to chronic ABMR. In renal transplants, acute ABMR is characterized by graft dysfunction manifesting over days and results from pre-formed/de novo donor-specific antibodies (DSA). According to revised Banff '15 classification all three features must be present for diagnosis of acute/active AMR; (1) histologic evidence of acute tissue injury which includes microvascular inflammation ($g>0$ and/or peritubular capillaritis ($[PTC]>0$), fibrinoid necrosis/transmural arteritis ($v>0$), acute thrombotic microangiopathy, or acute tubular injury; (2) linear C4d staining in PTCs (C4d2/C4d3 by immunofluorescence), or C4d>0 by immunohistochemistry [IHC]. For C4d negative lesions, at least moderate microvascular inflammation ($g+PTC\geq 2$)/increased expression of endothelial-associated gene transcripts (ENDATs) (3) serologic evidence of DSAs (HLA/non-HLA). For chronic ABMR, the morphologic evidence is transplanted glomerulopathy (TG) ($cg>0$), PTC basement membrane multilayering (on electron microscopy) and arterial intimal fibrosis of new onset. The cellular and molecular pathways regulating ABMR are still under study. However, evidence suggests B-cell and plasma cell activation results in the generation of DSAs, which bind to human leukocyte antigen (HLA) or non-HLA molecules expressed on endothelial cells within the renal allograft. In our experience of 2316 allograft biopsies from 2008 to 2016, ABMR was seen in 23.6% of patients. Mean HLA was 2.11 ± 1.44 and mean S.Cr. was 2.7 ± 1.45 mg/dL.

Biography

Kamal Kanodia completed his MD in 1995 from Saurashtra University, India and post-doctoral certificate course (PDCC) in Renal and Transplant Pathology by Indian College of Pathologists in 2003. Currently, he is Professor in Department of Pathology, Laboratory Medicine, Immunohematology, and Transfusion services in Institute of Kidney Diseases and Research Center (IKDRC)-Institute of Transplantation Sciences (ITS), Ahmedabad, India. He has a keen interest in renal and liver transplant pathology. He has 47 publications and serves on editorial board and reviewer in several journals. He has presented several oral and poster presentations at various national and international conferences.

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