Cross-talk between heart and kidney in transplant recipients

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The cardiovascular disease (CVD) is the leading cause of mortality in kidney transplant recipients, accounting for 30% of mortality in recipients who die with functioning graft. Successful kidney transplantation decreases cardiovascular mortality and morbidity compared with patients on dialysis therapy. But kidney allograft recipients with functioning grafts have a higher cardiovascular risk than the general population. Therefore, the adverse cardiovascular outcomes represent a critical issue during post-transplant management. Allograft survival is affected by the alloimmune factors as well as non-immune risks. Among them, hypertension, hyperlipidemia, smoking and proteinuria are well known as imposing allograft failure.

Cardiorenal syndrome (CRS) is a complex pathophysiological disorder of the heart and kidney whereby acute or chronic dysfunction in one organ may induce acute or chronic dysfunction in the other organ. CRS is classified as 4 types according to the initiating organ and chronicity. Traditional risk factors for cardiovascular disease affect the graft outcome. Kidney transplant recipients gain 22 to 30 pounds during the first year after transplantation leading to obese or morbidly obese. When examined at 6 year after transplantation, up to 63% of recipients meet the criteria for metabolic syndrome, with an associated decrease in kidney allograft survival and increased number of CVD events. We showed the pretransplant malnutrition, inflammation, and atherosclerosis (MIA) was associated with the poor cardiovascular outcome after transplantation. The patients with higher MIA score showed worse outcome of fatal/non-fatal acute coronary syndrome (ACS) and composite outcomes of ACS and all-cause mortality than with the lower MIA score. In the study of left ventricular (LV) remodeling after kidney transplantation, we demonstrated that LV hypertrophy regressed consistently after transplantation. The cumulative probability of LVH steadily and consistently regressed throughout the follow-up period, and the incidence of LVH regression increased from 7.4% at 1 year to 35.4% at 5 years after transplantation. But the persistency of LVH and high blood pressure increased the risk of allograft failure.

In this symposium, the interactions between heart and allograft kidney will be addressed.

Also, the post-transplant management for reducing traditional and non-traditional risks for cardiovascular disease will be discussed.