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Session : Postgraduate Course 11 (Kidney/Pancreas)

Date & Time, Place : November 16 (Thu), 15:00-16:30, Room 5F-1

Session Title : Pre-transplant screening and post-transplant consideration for complications

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## **Pre-transplant screening and post-transplant monitoring of cardiovascular complications**

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Cardiovascular disease (CVD) is a leading cause of morbidity and mortality in end-stage renal disease (ESRD) patients. The patients who received kidney transplantation (KT) were ESRD patients before transplantation. The cardiovascular risk may be improved after KT; however, cofactors such as diabetes, hypertension, atherosclerosis, and vascular calcification commonly predispose to progressive cardiovascular disease before KT. Furthermore, because KT candidates are often on the waiting list for a long time, even 5 to 10 years, many succumb to cardiovascular events during waiting. This cardiovascular risk frequently extends into the post-transplant period. The higher CVD risk in KT patients than in the general population is also reported. So, we aim to review the recommendations on properly screening CVD risk and calculate the CVD risk score. Furthermore, we will recommend the best strategy to manage the KT patients before and after KT. Currently, pre-transplant CVD risk screening is performed with reference to the most recent 2020 Kidney Disease: Improving Global Outcomes (KDIGO) Clinical Practice Guideline. Most of all, coronary artery disease (CAD) is prevalent in chronic kidney disease (CKD) patients and is a significant cause of death in this population. Furthermore, asymptomatic advanced CAD is also prevalent. However, pre-emptive intervention or early revascularization is controversial due to no evident clinical benefits in previous studies. So, protocolized risk prediction scoring for CAD should be used and validated in KT candidates. Pre-transplant functional status evaluation, such as self-reported physical assessment questionnaires, grip strength, or 6-min walk test (6MWT), is essential to predict CVD or survival outcomes after transplantation. Functional non-invasive imaging studies, echocardiography, single-photon emission computed tomography (SPECT), cardiac magnetic resonance, and myocardial perfusion scintigraphy are considered to have good prognostic value in pre-transplant CKD patients. Non-invasive coronary artery calcium score and coronary computed tomography are good predictive tools in MACE and all-cause mortality despite limiting interpretation. We can work up the candidates for perioperative management for CVD risk patients according to 'ACC/AHA guidelines on perioperative cardiovascular evaluation and management of patients undergoing noncardiac surgery.' However, treatment strategies for stable CAD patients are not conclusive. Recently, the ISCHEMIA-CKD (International Study of Comparative Health

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Effectiveness with Medical and Invasive Approaches) trial showed no benefit of invasive treatment compared to medical therapy. KT population also showed no benefit of revascularization than medical therapy in stable obstructive CAD in transplant candidates. Before considering pre-emptive invasive revascularization, recommendations emphasize the optimal medical treatment, including statin, anti-platelet, renin-angiotensin system blockades, and beta-blockers. Although kidney transplantation brings survival benefits compared to life-long dialysis in the CKD population, KT recipients still experience higher CVD risks and outcomes. Pretransplant CVD risks such as diabetes, old age, hypertension, dyslipidemia, and atherosclerosis could worsen post-transplant. Immunosuppressive therapy is associated with post-transplant obesity, new-onset diabetes, hypertension, dyslipidemia, and anemia. Personalized immunosuppression is required to reduce CVD risks. The safety and benefits of Sodium-glucose cotransporter 2(SGL2) inhibitor use in post-transplant patients have been studied. It needs to be confirmed if the SGLT2 inhibitor improves CVD outcomes in transplant recipients. The ALERT study suggested that statin reduces major cardiovascular events, coronary revascularization, stroke, and mortality in post-transplants. Anemia correction is helpful in heart failure management in the KT population. More active regarding CVD risk at every visit will lead to better clinical outcomes in KT patients. In the KT population, preexisting and post-transplant CVD risks are continuously monitored. Each case should be customized to reduce CVD events based on the risk factors, symptoms, and functional status, and managed as a multi-disciplinary assessment approach.