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Session Title : Updated prophylaxis for Infection

Viral infection prophylaxis

Kyungmin Huh
Samsung Medical Center, Republic of Korea

Infection is an important complication after solid organ transplantation, causing substantial burden of morbidity and mortality. However, advancements in antibiotic prophylaxis, immunosuppressive regimens, and early detection strategies have greatly reduced the incidence and improved the outcome of post-transplant infections. Still, physicians involved in the medical care of transplant recipients should be familiar with prophylaxis for infections. Cytomegalovirus (CMV) is a DNA virus that belongs to *Herpesviridae*. Primary CMV infection commonly occurs early in life and is mostly asymptomatic or self-limited. CMV remains latent in immunocompetent hosts, persisting within a wide variety of cell types for a lifetime. Reactivation of CMV, which ranges from asymptomatic viremia to tissue-invasive infection, is a risk factor for poor graft survival and higher mortality. The most important risk factor of CMV disease is the serostatus of donors and recipients. Seronegative recipients receiving organs from seropositive donors (D+/R-) face the highest infection risk, as they lack prior CMV-specific immunity. Conversely, seropositive recipients (R+) are at a moderate risk. Preventive strategies for CMV disease are either prophylaxis or preemptive treatment. Antiviral prophylaxis is shown to be effective in large trials and relatively easy to coordinate, but higher drug costs and potential toxicity are important pitfalls. Preemptive therapy requires more frequent laboratory monitoring, and the initiation of treatment may be delayed. For high-risk CMV D+/R- individuals, antiviral prophylaxis is advised. On the other hand, intermediate-risk CMV R+ recipients might follow organ-specific recommendations; abdominal organs or heart transplant patients can opt for either antiviral prophylaxis or preemptive therapy, while lung recipients are recommended to undergo antiviral prophylaxis. For the low-risk group, CMV D−/R−, CMV prophylaxis is not generally recommended. Antiviral prophylaxis is recommended to start early after transplantation. Specific guidelines are set based on the organ and patient risk: kidney recipients with CMV D+/R- serostatus should undergo prophylaxis for 6 months, while heart, liver, and pancreas recipients for 3–6 months, and lung recipients for 6–12 months. For preemptive strategies, quantitative nucleic acid testing is the recommended diagnostic method, and the optimal threshold for treatment onset should be center-specific. The duration of preemptive antiviral therapy should be personalized, continuing until CMV is undetectable or falls below a set threshold. Monitoring for CMV post-transplantation should occur at least once a week for a

minimum of 12 weeks, with adjustments based on the patient's immune status and condition. Varicella zoster virus and herpes simplex virus infection can be prevented by antiviral agents used for CMV prophylaxis. If antiviral prophylaxis for CMV is not applied, short-term prophylaxis using oral acyclovir, valacyclovir, or famciclovir is indicated. Pre-transplant vaccination for herpes zoster has been shown effective, and post-transplant vaccination using recombinant zoster vaccine is safe and immunogenic. Preventive strategies for Epstein-Barr virus (EBV) are generally not recommended. Preemptive therapy with EBV viral load surveillance is recommended for EBV-seronegative recipients to prevent posttransplant lymphoproliferative disease. Up-to-date vaccination is recommended to prevent influenza and COVID-19.