1574. Cancer Chemotherapy May Induce Acquisition of Antibiotic Resistance Genes in Antibiotic-Naïve Cancer Patients

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Disclosures: All authors: No reported disclosures.

Results. Seven patients provided pre- and post samples. Overall there was a trend toward reduction/eradication of ARGs in 10 of 15 of antibiotic resistance gene classes. For the rifampin class no ARGs were noted in either pre- or post-samples. For four of the ARG classes (aminoglycosides, β-lactamase, fosfomycin, multidrug efflux pumps), there was an acquisition or trend toward an increase in ARB abundance.

Conclusion. Cancer chemotherapy agents may be contributory to the acquisition of antibiotic resistance genes in cancer patients. Of note, these genes confer resistance to some of the most important therapeutic or environment cleaning compounds utilized during clinical care. Further studies are warranted and ongoing to confirm these findings and overcome sample size limitations.

Disclosures. S. Apewokin, Viracon: Assay provision for research by viracon, Research support
Background. Impaired cytomegalovirus (CMV)-specific cell-mediated immunity (CMV-CMI) is a major cause of uncontrolled CMV reactivation and associated complications in both solid-organ transplantation (SOT) and hematopoietic stem cell transplantation (HSCT). Reliably assessing CMV-CMI is desirable as it allows for individual adjustment of antiviral and immunosuppressive therapy. We demonstrate here the suitability of a novel IFN-γ ELISpot assay (T-Track CMV) based on the stimulation of PBMCs with pp65 and IE-1 CMV proteins, to monitor CMV-CMI in SOT and HSCT patients.

Methods. Two independent prospective, longitudinal, observational, multicenter studies were conducted: in 86 intermediate-risk (D+/R−, D+/R+) renal transplant recipients (completed), and in 175 intermediate- or high-risk (D+/R+, D+/R−, D−/R+) HSCT recipients (ongoing). In both studies, patients underwent pre-emptive antiviral therapy. CMV-CMI activity, CMV load and clinical complications were monitored over ~6 months post-transplantation.

Results. In the kidney transplantation setting, 95% and 88%-92% of IFN-γ ELISpot test results were positive pre- and post-transplantation, respectively. CMV-specific response was reduced following immunosuppressive therapy and increased in patients with graft rejection, indicating the ability of the assay to monitor the patients’ immunosuppressive state. Interestingly, median pp65-specific response was 9-fold higher in patients with self-clearing viral load compared with antivirally-treated patients prior to first detection of CMV viremia (P < 0.001), suggesting that reactive pp65 is a potential immuno- petence marker. In HSCT patients, interim data analysis indicates that pp65-specific CMI measured after resolution of a primary CMV reactivation (requiring antiviral treatment) is a fair predictor of occurrence of recurrent CMV reactivation. Out of 71 patients (25 D+/R−, 3 D+/R+, 43 D−/R+) who experienced a primary CMV reactivation, 27 encountered a recurrent CMV reactivation. Interestingly, 39/44 (89%) patients free of recurrent reactivation had a positive pp65-specific test result following primary CMV reactivation.

Conclusion. Altogether, this novel IFN-γ ELISpot assay is a highly sensitive immune-monitoring tool with a potential use for the risk assessment of CMV-related clinical complications after SOT and HSCT.

Disclosures. All authors, Lophius Biosciences: Investigator, Research support.