中文題目：免疫球蛋白療法改善患有巨細胞病毒血症感染合併重症之風濕疾病病人預後

英文題目：Intravenous Immunoglobulin Rescues Critically Ill Patients with Rheumatic Diseases and Cytomegalovirus Viremia

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Objective: Human cytomegalovirus (HCMV) is characterized by a restricted host range, production of cytoplasmic inclusions, and a long life cycle. HCMV infection induces long-term immunity, which restrains viral replication after reactivation from latency. The prevalence of patients with simultaneous rheumatic diseases and HCMV diseases needs to be determined. These patients often die but the data are limited. The use of intravenous immunoglobulin (IVIG)—therapeutic polyclonal immunoglobulins purified from healthy donors—is beneficial against HCMV pneumonia in patients who had received solid organ transplants.

Methods: This retrospective study was conducted in a 6-year period at a single medical center. All enrolled patients were admitted to the hospital for the autoimmune diseases and the comorbidities. Patients with HCMV viremia was defined as the presence of CMV DNA levels above 500 normalized copies in the quantitative nucleic acid testing of serum. Medical records including the use of disease-modifying anti-rheumatic diseases (DMARDs) and steroid of the enrolled subjects were collected. Severity of HCMV viremia including admission at intensive care unit (ICU) were registered. The statistical analyses include the Chi-square test for categorical variables, the student's t test for normally distributed variables, and the Wilcoxon rank sum test for non-normally distributed continuous variables.

Results: 56 patients were enrolled in this cohort and the mean age was 60.3±15.2 years old. Systemic lupus erythematosus (37.5%) is the most common rheumatologic disease. All enrolled subjects had received steroid before the onset of HCMV viremia and 76.7% of the patients had taken at least single DMARD. 69.4% of the patients survived from HCMV viremia. 88.2% of dead patients experienced the higher rate of concurrent infections, drug resistance organism infections and fungemia ($p = 0.031$, 0.032, and 0.001). 48.2% patients in the cohort had been admitted to the ICU. Compared to the survived patients, the mortality group had experienced more continuous hemodialysis and shock, $p = 0.001$ and 0.011, respectively. More dead patients received extracorporeal membrane oxygenation (ECMO) due to severe

hypoxemia, (p =0.026). 28.6% of the whole cohort received IVIg treatment. There is no difference between the IVIG treated and untreated group in the mortality rate. Nonetheless, IVIG treated patients had more significant impaired liver and kidney function, herpes simplex virus infection, hypoxemia and had longer ICU admission dates and received more plasma exchanges due to underlying active autoimmune diseases.

Conclusion: IVIG treatment helped rescue HCMV viremia in patients with rheumatic diseases and identified risk factors that might lead to death, including leukopenia, shock, and concurrent infections. The timing for launching IVIG therapy in patients with rheumatic diseases remains to be defined.