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Sepsis in Immunocompromised Patients: Current Status in Korea

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Severely immunocompromised patients have increased risk of infection by common pathogens, as well as opportunistic infections by less virulent microorganisms of little concern to immunocompetent hosts. This highly developing risk of infection predisposes such individuals to increased risk of sepsis and septic shock.[1,2] The most common cause of severe, prolonged, immune compromise is systemic chemotherapy as a treatment for some forms of hematologic malignancies (e.g., induction chemotherapy for acute leukemia and lymphoreticular malignancies), delayed bone marrow recovery following allogeneic hematopoietic stem cell transplantation, and solid organ transplantation. Less intensive chemotherapeutic regimens can cause a low incidence of neutropenia and short duration of bone marrow suppression, such as those regimens used for many solid organ malignancies. Also, the steroids used to treat various rheumatologic diseases and human immunodeficiency virus (HIV) infection contribute to immunosuppressive states. In addition, chronic medical illnesses, such as diabetes mellitus, chronic obstructive pulmonary disease, chronic kidney disease, liver cirrhosis, and heart failure, are often associated with immune abnormalities that increase the susceptibility of affected patients to specific life-threatening infections.[3]

The frequency of community and hospitalized patients with immunocompromised host defenses has increased dramatically over recent decades such that it is common for intensive care unit (ICU) care physicians to routinely encounter immunocompromised hosts. Despite significant advances in the prevention, diagnosis, and treatment of infection in immunocompromised hosts, infection remains a major cause of morbidity, increased hospital stay, and increased total costs.[4] As a result, the mortality of these patients can be higher because of higher incidence of infection severity. However, the superimposition of compromised host defenses and acute catastrophic illness complicates the detection and management of infection in such patients. Moreover, while there is a rapidly increasing evidence base in critical care medicine, there are no documented management guidelines for sepsis in immunocompromised patients.[5]

In Korea, there is no reported data about current status for sepsis in immunocompromised patients. In this issue of the Journal, Oh et al[6] reported the influence of immunosuppressants on in-hospital mortality from sepsis. The authors retrospectively collected data on patients with sepsis from data of Health Insurance Review & Assessment (HIRA) Service over a period of five years (from 2009 to 2013). In their study,

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in-hospital mortality was 38.9%. When total patients were divided into three groups (immunosuppressant group, steroid-only group, and control group), the steroid-only group and immunosuppressant group received more frequent ICU care, had longer hospital length of stay, and incurred higher medical expenditure. Also, age, male gender, comorbidities (malignancy), and ICU treatment were associated with in-hospital mortality based on univariate and multivariate analyses.

The main finding of the present study was that in-hospital mortality was lower in patients taking immunosuppressant drugs compared to those not taking immunosuppressants. Oh et al[6] suggested several considerations of this finding. First, the balance between proinflammatory response and anti-inflammatory response in patients with immunosuppressants and the use of broad-spectrum antibiotics in the early stage of sepsis might be associated with the low mortality rate in these patients. Second, there were differences in the study method compared with previous studies,[4,7,8] which analyzed patients on immunosuppressants rather than immunocompromised hosts (e.g., patients receiving systemic chemotherapy or with HIV infection).

Although, the current study was conducted with a retrospective nature, it is the first to report the epidemiologic status of Korean sepsis patients taking immunosuppressants before admission using data from HIRA. Korean ICUs differ from those in Western countries in many aspects (such as medical expenses, familial support, and social customs); this implies distinct clinical characteristics in patients with sepsis who were immunocompromised before admission. In addition, staffing of nurses and full-time intensivists in Korean ICUs in university and teaching hospitals is poor compared with that in advanced countries,[9,10] which could be associated with poor outcomes. Moreover, there is no universal treatment guideline for sepsis in such patients. Therefore, further investigations are needed to determine the distinct clinical characteristics and prognostic factors of such patients through large-scale studies in Korea.

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