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Perspective

Sepsis Associated with HIV Infection and Tuberculosis

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DESCRIPTION

HIV-positive patients now have longer life expectancies and lower rates of morbidity thanks to antiretroviral therapy. On the other hand, diseases unrelated to HIV infection have become more significant due to the decrease in AIDS-related ailments. Of these, sepsis is linked to a worse prognosis and has been the cause of 12–31% of HIV-positive patients' hospitalizations to Intensive Care Units (ICUs). Although the estimated incidence rate of sepsis is 150–300 cases per 100,000 people, individuals with chronic illnesses have an increased rate of 700 occurrences per 100,000 patients. The rate of HIV infection in patients is up to 1,000 cases per 100,000 patients. Despite this, compared to individuals with a similar clinical condition or a higher anticipated lethality, HIV-positive patients with severe sepsis are not as frequently admitted to the Intensive Care Unit (ICU).

Immunosuppressed patients may have mild or non-specific clinical symptoms of sepsis, and a weakened systemic host response to infection is anticipated. Furthermore, a broader range of antibiotic regimens may be necessary due to the expanded spectrum of pathogenic pathogens. In HIV-positive patients, sepsis requires expert management in order to enhance prognosis, select appropriate empirical and targeted antimicrobial medicines, and forecast and establish the accurate diagnosis.

Pro Calci Tonin (PCT) and C-Reactive Protein (CRP), two inflammatory biomarkers, have been linked to systemic infection in patients with various immunological dysfunctions. However, this reaction appears to be less pronounced in cases of viral, fungal, and mycobacterial infections—microorganisms commonly detected in AIDS patients and is mostly seen in cases of bacterial sepsis. Additional indicators, such as serum levels of Inter Leukin-10 (IL-10) and Inter Leukin-6 (IL-6), have been linked to fatal outcomes, multiple organ failure, and more severe infections. The pro- and anti-inflammatory cytokine balance in sepsis appears to be indicated by the IL-6/IL-10 ratio. It's interesting to note that HIV immunological failure raises IL-10 levels. The observed clinical manifestations and outcomes of these patients in the critical care units have changed as a result of improved HIV/AIDS management. While admissions for opportunistic infections have been trending downward, there has been an opposite trend for other infectious and metabolic diseases. People with HIV/AIDS are now frequently admitted to hospitals due to severe sepsis. In a group of critically ill HIV/AIDS patients, we showed in this prospective study that the primary risk factor for hospital mortality is severe sepsis.

There was an increase in sepsis-related mortality during both the short- and long-term follow-up. In fact, the in-hospital mortality rate for patients with sepsis was considerably greater than that of non-sepsis patients. Severe sepsis was mostly brought on by nosocomial bacterial infections, which were highly correlated with poorer outcomes. Compared to individuals without HIV infection, patients with acquired AIDS seem to get nosocomial infections more frequently. Immunosuppression level, history of antibiotic usage, and increased exposure to invasive devices like intravenous catheters have all been linked to nosocomial infections. Our cohort's extremely low CD4 cell count may have contributed to the high rate of antibiotic resistance and subsequent nosocomial infection development. Antibiotics were used more frequently for bacterial infections or to prevent opportunistic infections.

Nearly all sepsis patients had bloodstream and pneumonia infections as their primary sites of infection, and the majority of the microbiology of severe infections was made up of bacteria that were acquired in hospitals. Two other studies similarly found that lower-tract respiratory infections were the primary source of infection. Furthermore, our population had a significant rate of nosocomial bacteremia (43%). The prognosis of HIV/AIDS patients can be adversely affected by bloodstream infections. The microbiology of the patients with HIV/AIDS sepsis was often comparable to that found in people without HIV infection. Gram-negative and gram-positive bacteria were predominant, however Mycobacterium tuberculosis was also present and was the primary pathogen linked to severe sepsis in five out of 44 cases. Bacteremia in AIDS patients has been linked to tuberculosis, a disease that is extremely common in developing nations.

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