Invasive bacterial infections in patients with advanced HIV disease in Kinshasa: prevalence, antibiotic resistance and treatment

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Background

Patients with advanced HIV disease (AHD), defined as WHO clinical stage 3 or 4 and/or CD4<200, have a high risk of death. One common cause of death is invasive bacterial infection (IBI, i.e., septicemia or meningitis). The global increase of antibiotic resistance threatens current treatments against bacterial infections. This study aims to describe the burden of IBI among patients with AHD to guide empirical treatment protocols.

Methods

This is a prospective, descriptive study implemented at Kabinda General Hospital in Kinshasa, Democratic Republic of Congo (DRC). All patients with AHD and a blood or cerebrospinal fluid (CSF) culture collected because of: 1) fever/hypothermia and/or signs of shock, on admission or during hospitalization, and/or 2) previous exposure to care (<30 days), were eligible to participate. Clinical and bacteriological data were collected. An IBI was defined as a positive blood or CSF culture, and then categorized as: 1) community-acquired or healthcare-associated, if occurring ≤48 hours since hospitalization, and contingent on previous exposure to care (<30 days), or 2) hospital-acquired, if occurring >48 hours after hospitalization.

Results

From August 2021 to July 2022, we included 997 patients, corresponding to 1198 hospitalizations with ≥1 blood and/or CSF culture. The proportions of community-acquired, healthcare-associated, and hospital-acquired IBI among hospitalizations were 5.9% (71/1198), 9.2% (110/1198), and 3.5% (42/1198), respectively. The main bacterial agents responsible for community-acquired and healthcare-associated IBI were non-Typhi Salmonella followed by Gram-positive Cocci, while *K. pneumoniae* was most common in hospital-acquired IBI. The levels of antibiotic susceptibility among Enterobacterales were similar between community-acquired and healthcare-associated IBI, with low susceptibility to ceftriaxone and ciprofloxacin, but high susceptibility to carbapenems and azithromycin.

Conclusion

We confirmed alarming levels of antibiotic resistance among patients with ADH in the DRC. Discussions are ongoing to translate results into practice, in particular to target broad spectrum empirical antibiotics.

Invasive bacterial infections among hospitalized patients with advanced HIV in Kinshasa showed high levels of antibiotic resistance regardless of their recent, previous exposure to care.