Reviewer’s report

Title: Bacteremia in Hospitalized Patients With Human Immunodeficiency Virus: A Prospective, Cohort Study

Authors:
Bekele Afessa (schwartz.roberta@mayo.edu)
Ian Morales (schwartz.roberta@mayo.edu)
Bethany Weaver (schwartz.roberta@mayo.edu)

Version: 2 Date: 2 Jul 2001
Reviewer: Dr R Manfredi

Level of interest: A paper whose findings are important to those with closely related research interests

Advice on publication: Accept after revision, which I do not need to see

General comments

1. The authors describe a prospective, large, but single-centre survey of bacterial infections complicating the course of HIV disease, and analyze their data according to some risk factors and disease outcome.
2. The Objective and Methods stated by the authors are generally coherent with the obtained Results, so that this study may be compared with other quoted by the international literature.
3. The Discussion contains sufficiently updated literature quotation and discussion, and it is related to study evidences.
4. No problems in writing and clarity are recognizable.
5. However, many overlapping papers have been published since the early period of the HIV pandemic, and during the last years most authors focused on the role of antiretroviral therapy in influencing both frequency, microbiological, and clinical significance of HIV-associated bacterial disease. As a consequence, some areas of the submitted paper may need improvement and/or further discussion.

1. Unfortunately, the authors do not consider the role of highly active antiretroviral therapy (HAART), which represented a major factor in all changes of natural history of HIV disease during the past five years. The availability of data regarding the use of antiretrovirals and/or HAART in patients who developed bacterial infection is expected to considerably improve the contribution.
2. Moreover, some possible risk factors for bacterial infection in the course of HIV disease have not been considered by the Authors: among them, the possible role of prior antimicrobial treatment and/or chemoprophylaxis (i.e. cotrimoxazole administration for Pneumocystis carinii pneumonia, and other AIDS-related disease).
3. The rate of hospital-acquired bacterial infection and that of catheter-associated disease appear significantly (and surprisingly) lower than those recognised by other studies dealing with HIV-associated bacterial diseases. The authors should try to explain such a situation (Short admissions? Reduced use of invasive diagnostic or therapeutic procedures? Reduced use of prior broad-spectrum antimicrobial therapy?), and discuss their data accordingly.
4. The absence of a significant difference as to mean CD4+ lymphocyte count in bacteremic versus non-bacteremic patients with HIV disease is also somewhat surprising, and perhaps deserves some more comment or tentative hypothesis.

5. The role of Staphylococci appears less relevant than previously noticed in the majority of international literature reports: is there a possible reason for this phenomenon?

6. Why hematogenous dissemination proves significantly more frequent among Hispanics and African Americans, compared with whites? Are there different risk factors for bacterial infection according to race and gender in your patient population, and why?

7. It is not clear whether HIV-infected patients who developed a sepsis appeared to have a greater leukocyte cell count than uninfected ones, the general population of HIV-infected patients followed by your centre, or patients with infections other than bacteremia? Usually, leukopenia and neutropenia are strong risk factors for blood stream dissemination. As a result, such an unexpected figure needs further explanation and discussion throughout the text.

8. Abstract. The first sentence of the "Abstract" section is not supported by data directly drawn from the study: how did you evaluate "an increased mortality rate" in your prospective cohort without a control group?

9. Methods. Your survey is not so updated, since it included patients observed until March 1998. Does it contain relevant information, especially after that the introduction of HAART in 1997 significantly changed the natural history of HIV disease?

One isolated positive blood culture is usually not considered as a sufficient criterion for an established diagnosis of sepsis. Generally, at least two consecutive positive blood cultures or one positive blood culture plus one culture from another body site are needed to exclude contamination (as you did for coagulase-nagative staphylococci).

10. Results (second paragraph). As stated above, before attributing an episode of sepsis to an isolated focus of infection, you need to mention in the "Methods" section how you assessed the possible source of bacteremia (i.e. urine culture, bronchoalveolar lavage, and so on).

11. Discussion. The discussion should take into consideration changes occurred after HAART introduction, but the authors have very limited data regarding the role of antiretroviral therapy in their series. This is probably the main drawback of a study to be published at mid-2001.

12. References. The reference list probably needs some update: only two references are of year 2000, and most did not deal with the role of HAART in the frequency and features of HIV-related sepsis-bacteremia (cfr. Manfredi R et al, AIDS 1999; 13:1274).

13. Tables. Usually Corynebacterium spp., Bacillus spp., Propionibacterium spp., unidentified gram-positive rods, and other organisms with a low virulence are considered trivial contaminants, especially when they are recovered from one single blood culture. Unfortunately, the authors considered also single positive blood cultures, so that at this time we do not know whether among all considered episodes of "sepsis-bacteremia" there were some simple contaminations.

Surprisingly, i.v. drug addicts had a lower rate of bacteremia compared with other HIV-infected patients with other type of exposure (i.e. sexual) to HIV infection: this issue deserved explanation and further discussion, since the large majority of literature data strictly link i.v. drug abuse with a more elevated risk of sepsis, in both HIV-infected and non-HIV-infected subjects.

**Competing interests:**

None declared.