



ELSEVIER



www.elsevierhealth.com/journals/jinf

Bloodstream infections in adults: Importance of healthcare-associated infections

J. Vallés^{a,*}, E. Calbo^b, E. Anoro^c, D. Fontanals^a, M. Xercavins^b,
E. Espejo^c, G. Serrate^a, N. Freixas^b, M.A. Morera^c, B. Font^a,
F. Bella^c, F. Segura^a, J. Garau^b

^a Critical Care Center, Hospital Sabadell, Institut Universitari Parc Taulí, 08208 Sabadell, Spain

^b Hospital Mútua Terrassa, University of Barcelona, Barcelona, Spain

^c Hospital Terrassa, University of Barcelona, Barcelona, Spain

Accepted 1 October 2007

Available online 19 November 2007

KEYWORDS

Bloodstream infection;
Healthcare-associated
infection;
Bacteremia

Summary Objective: The objective of this study was to evaluate the characteristics of bloodstream infections occurring among outpatients having recent contact with the health care system compared to hospital and community-acquired infections.

Methods: Prospective observational cohort study of adult patients with bloodstream infections at three teaching hospitals. Bloodstream infection was defined as hospital-acquired if the first positive blood culture was performed more than 48 h after admission. Other bloodstream infections were classified as healthcare-associated or community-acquired.

Results: A total of 1157 episodes of bloodstream infections were studied; 581 (50.2%) were community-acquired, 295 (25.5%) were hospital-acquired, and 281 (24.3%) were health care-associated. Of the 281 health care-associated bloodstream infections, 68 (24%) occurred in patients residing in a nursing home, 104 (37%) in patients receiving intravenous therapy, health care at home, chemotherapy or attending dialysis, and 169 (60%) in patients hospitalized during the 90 days before their bloodstream infection (some patients belonged to more than one risk category). The highest prevalence rate of MRSA infections occurred in healthcare-associated infections (5%) ($p < 0.001$). A significantly higher mortality rate was seen in the group with healthcare-associated infections (27.5%) than in community-acquired infections (10.4%) ($p < 0.001$).

Conclusions: Our results confirm that healthcare-associated bloodstream infections show important differences from community-acquired bloodstream infections and suggest that empirical antibiotic therapy should be similar to hospital-acquired bloodstream infections, taking into account the epidemiologic characteristics of each region.

© 2007 The British Infection Society. Published by Elsevier Ltd. All rights reserved.

* Corresponding author. Hospital Sabadell, Parc Taulí s/n, 08208 Sabadell, Spain. Tel.: +34 93 723 1010; fax: +34 93 723 3863.
E-mail address: jvalles@cspt.es (J. Vallés).

Introduction

Bloodstream infection (BSI) continues to be an important cause of morbidity and mortality, despite the availability of potent antimicrobial agents and sophisticated life-support facilities. In recent years, studies of epidemiology, microbiological etiology, and prognosis have been performed all over the world.^{1–8}

BSI has traditionally been categorized as community and hospital-acquired infections.^{9,10} A hospital-acquired infection is typically acquired in an environment of resistant microorganisms or microorganisms typically found in a hospital setting and it is often associated with a procedure or with instrumentation. A community-acquired infection presumably develops spontaneously, without an association with a medical intervention and occurs in an environment with fewer resistance pressures. However, some infections are acquired under circumstances that do not readily allow for the infection to be classified, as belonging to either of these two categories. Such infections include infections in patients with serious underlying diseases and/or invasive devices receiving care at home or in nursing homes or rehabilitation centers; those undergoing dialysis or chemotherapy in physicians' offices and those who frequently have contact with healthcare or recurrent hospital admissions. For this reason, a new classification scheme for BSIs has been proposed to characterize these difficult-to-classify BSIs and distinguish between infections occurring among outpatients having recurrent or recent contact with the healthcare system, patients with true community-acquired infections and the inpatients with hospital-acquired infections. The preliminary results have demonstrated that healthcare-associated infections are similar to hospital-acquired infections and consequently the empirical antimicrobial therapy should be different from that in community-acquired infections.^{11,12}

The objective of this study was to evaluate the usefulness of this new classification to analyze the BSI detected in three hospitals in the same geographic area and to compare the three different categories in terms of comorbid conditions, source of infection, pathogens and their antimicrobial susceptibility patterns, appropriateness of antibiotic therapy and prognosis.

Patients and methods

Setting

This prospective, observational, and multicenter study was performed in three hospitals in Catalonia, Spain: Hospital Sabadell (HS), Hospital Mutua Terrassa (HMT), and Hospital Terrassa (HT). All institutions are urban teaching hospitals with intensive care units (ICU) but without any solid organ transplant programs.

Study design

All consecutive adults patients (>18 years) admitted from March 15, 2003 to March 15, 2004, who presented at least one true positive blood culture on admission or developed

BSI during hospitalization were considered eligible for the study. Patients visited in the emergency department or in acute day hospitals that presented BSI but were not hospitalized were also included. Clinical, epidemiological, and laboratory data of episodes considered true BSI were prospectively recorded, using a standardized worksheet and were stored in a computer database.

Data collection

Each positive blood culture was evaluated by at least one predetermined physician with specific expertise in infectious diseases at each institution to determine whether it represented true infection or contamination. This decision was based on multiple factors, including the patient's history, findings of the physical examination, microbiological results of blood cultures, clinical course, and results of cultures of specimens from other body sites. If the patient presented more than one episode caused by the same pathogen, only the first episode of bloodstream infection was analyzed. If the episode of BSI was due to different microorganisms or occurred at least one week after the first episode, it was considered as a new bloodstream infection, unless it was clear to the investigator that the new positive culture was part of the previous episode.

We collected data on demographic characteristics, risk factors during hospitalization, blood cultures, susceptibility testing, appropriateness of empiric antibiotic treatment, dates of admission and discharge or death. Basic activities during daily living prior to BSI were measured using the Barthel index,¹³ and severity of underlying diseases were classified using the McCabe scale,¹⁴ as ultimately fatal disease (50% chance of death within five years), rapidly fatal disease (50% chance of death within two months), and non-fatal underlying disease. Crude mortality included all patients who died in hospital. Follow-up continued for a maximum of 30 days after enrollment. Only the first episode of bloodstream infection was analyzed to evaluate the crude mortality and the mortality at follow-up. Informed consent was not required by the ethics committee, because confidentiality was guaranteed and no interventions were performed.

Definitions

Terms used are defined as follows.

Hospital-acquired BSI was defined by a positive blood culture obtained from patients who had been hospitalized for 48 h or longer.

Healthcare-associated BSI was defined by a positive blood culture obtained from a patient at the time of hospitalization or within 48 h of admission, if the patient fulfilled to any of the following criteria¹¹:

1. Resided in a nursing home or long-term care facility in the 30 days before the BSI.
2. Was hospitalized in an acute care hospital for 48 h or longer in the 90 days before the BSI.
3. Attended a hospital or dialysis clinic or received intravenous chemotherapy in the 30 days before the BSI.

Download English Version:

<https://daneshyari.com/en/article/3375587>

Download Persian Version:

<https://daneshyari.com/article/3375587>

[Daneshyari.com](https://daneshyari.com)