Incidence, timing and aetiology of bloodstream infections following orthotopic liver transplantation or hematopoietic stem cell transplantation – a single center experience

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BACKGROUND AND OBJECTIVES

Bloodstream infections (BSI) are an important cause of morbidity and mortality and major complications of both orthotopic liver transplantation (OLT) and hematopoietic stem cell transplantation (HSCT). Bacteremias have been documented in 24-35% OLT patients, and in those patients mortality ranges between 24-36%. Incidence of BSI in HSCT patients has been observed to be 13-64%, with mortality rates associated with BSI from 10-27%. Appropriate empirical antimicrobial therapy has been shown to reduce mortality, especially among patients with Gram-negative bacteremia. Knowing characteristic timing of bacteremia occurrence enables anticipation of these infections and their earlier detection, and knowing the pattern of causative microorganisms is a prerequisite for determining suitable empirical therapy. The objective of this study was to evaluate and compare incidence, timing and aetiology of BSI post transplantation (TX) in two groups (OLT and HSCT) of patients in order to characterize epidemiology of bacteremias occurring in a single institution.

RESULTS

78 BSI were identified (OLT: n=42, HSCT: n=36) at a median of 18 (range 1-256, SD 75) days post TX (OLT: median 42, range 1-256, SD 85 days, Mann Whitney p=0.004). In both groups, the majority of BSI were observed in the first trimester following TX, in HSCT patients mostly (69.4% of all BSI in HSCT) during the first two weeks (Fig. 1). Gram-negative (GN) organisms were the prevalent cause (52.6%) of BSI in both groups, with Pseudomonas aeruginosa accounting for 16.7% of all BSI and 31.7% of all GN BSI. Gram-positive (GP) pathogens were responsible for 37.2% of BSI, with coagulase-negative staphylococci being the most prevalent in this group (17.9% of all pathogens, 48.3% of all GP organisms). Mixed BSI represented 3.8% and fungaemias (candidaemias) 6.4% of all BSI. No statistically significant differences in aetiology of BSI (GN vs. GP) were found between OLT and HSCT patients, neither during the whole period of observation (1 year), nor in any of the 4 trimesters. A trend towards higher incidence of fungaemia in OLT and aetiology of GN BSI compared to HSCT patients was observed (Chi square, p=0.09).

During the last decade Gram-positive bacteria emerged as major pathogens causing bloodstream infections after liver transplantation and hematopoietic stem cell transplantation. However recent studies have reported a reemergence of Gram-negative bacteria in both OLT and HSCT patients. In our study, most BSI were caused by GN organisms in both groups. Significant differences in epidemiology of BSI between OLT and HSCT patients were not found. BSI occurred mostly during the first trimester post TX, in HSCT patients significantly earlier than in OLT patients, usually during the first 2 weeks. Due to high incidence of Pseudomonas bacteremias observed in our institution, initial empirical therapy should inevitably include agents with strong antipseudomonal activity.

CONCLUSIONS

REFERENCES