Healthcare-Associated Klebsiella pneumoniae carbapenemase Producing K. pneumoniae Bloodstream Infection: The Time Has Come

To the Editor—Klebsiella pneumoniae carbapenemase (KPC)–producing K. pneumoniae (KPC-Kp) has reached a worldwide diffusion, and the associated mortality rate of infected patients is ranging from 45% to 56% [1]. Several risk factors for mortality were identified in patients with KPC-Kp bloodstream infection (KPC-Kp BSI), such as the severity of the underlying disease or the delay in administration of appropriate therapy [2, 3]. Usually KPC-Kp infections arise in patients with prolonged hospital stay and have been previously treated with antibiotics [3]. We report on patients with KPC-Kp BSI diagnosed within 5 days after hospital admission [4].

The mortality was evaluated at 21 days after the first positive blood cultures, and appropriate treatment has been considered as the administration for ≥48 hours of an antibiotic with in vitro activity [5].

Eighteen patients with healthcare-associated KPC-Kp BSI were studied (Table 1). The majority of patients were men (11 [61%]), had a mean age of 63 years (standard deviation [SD], 14), had a previous admission in the 6 months before BSI onset (13 [72%]), or underwent surgery during the hospital stay (13 [72%]). Ten patients (56%) were in a medical ward at the time of diagnosis. The median time between hospital admission and KPC-Kp BSI was 3 days (SD, 1 day), and the mean Acute Physiology and Chronic Health Evaluation II (APACHE II) score was 16 (range, 3–36). Five patients were colonized by KPC-Kp before KPC-Kp BSI. The comorbidities more frequently reported were malignancy (5 [36%]), chronic renal failure (4 [29%]), hepatopathy (3 [17%]), and cardiovascular disease (3 [17%]). After a median of 2 days (SD, 1 day), the empiric antibiotic treatment was changed and all patients were appropriately treated, mostly with combination therapy, according to the in vitro sensitivity. The overall mortality was 22% (4 patients). At univariate analysis the mortality was significantly associated with liver disease (P = .031), chronic renal failure (P = .047), and high APACHE II score (P = .01). The survival was associated with appropriate treatment administered for ≥48 hours.

Usually, KPC-Kp BSI infections are diagnosed a median of 28–37 days after hospital admission [6–8]. In this study we report for the first time 18 patients with KPC-Kp BSI within 5 days after hospital admission, which had a very low crude mortality rate (22%) compared with 45% in the above-mentioned patients with nosocomial KPC-Kp BSI infections [6–8].

The pathogenesis of KPC-Kp BSI infection seems to be consistent with a multistep process where comorbidities, host factors, and prolonged antibiotic pressure contribute to the invasion of...
the bloodstream by KPC-Kp after the gastrointestinal tract is colonized. We could hypothesize that these factors are less active in the early days after admission, even if comorbidities such as renal failure and liver disease are significantly associated with mortality in our patients.

In conclusion, notwithstanding the low number and the heterogeneity of our patients, we report a new epidemiological finding, represented by healthcare-associated KPC-Kp BSI. KPC-Kp should be considered to be a potential pathogen of BSI early after hospital admission, underscoring the need for early screening of patients at risk to increase the likelihood of empiric treatment.

Note

Potential conflicts of interest. All authors: No reported conflicts.

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References


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