Discussion

The highest MDR Acinetobacter spp. rates have been observed in the South and Southeast European countries’ ICUs, which were associated with significant use of carbapenems. In Vojvodina Province, Serbia, from 2002 to 2013, CR rate dramatically increased from 3.8% to above 90%.

Our data showed high resistance rates of Acinetobacter spp. isolates to almost all the tested antimicrobials. Resistance to carbapenems isolates of Acinetobacter spp. was 98% (100% in non-survivors vs 95% in survivors). Also, resistance to fluoroquinolones, aminoglycosides, and carbapenems was above 95%. During the study period, all of the tested Acinetobacter spp. isolates were sensitive to colistin (100%), which is in accordance with the results of AMR surveillance at the time of our study.

According to a systematic review and meta-analysis of 16 observational studies, the crude mortality rates for patients with CRAB bacteremia ranged from 16% to 76%. Our data showed high mortality of ICU patients with MDR Acinetobacter spp. bacteremia. The 7-day mortality, 14-day mortality, and 30-day mortality rates were 32.9%, 42.1%, and 48.2%, respectively. Similar results were reported in prior studies, although mortality rates in our study were slightly higher.

Contrary to most studies’ results, previous use of invasive procedures was not a risk factor for adverse outcome in our review. Results of the univariate analysis in our study found that the older age of patients, higher APACHE II score at ICU admission, higher CCI score, having diabetes mellitus (OR = 3.896, 95% CI: 1.023-14.840, p = 0.046), and receiving inappropriate antibiotic therapy after the onset of bacteremia (OR = 2.514, 95% CI: 1.075-5.882, p = 0.033) were independent predictors of 30-day mortality in patients with MDR Acinetobacter spp. bacteremia. In the univariate analysis, the variables with p >0.05, which entered the multivariate regression model, were age, APACHE II score, two or more co-morbidities, diabetes mellitus, and inappropriate antimicrobial therapy.

A significant difference in the Kaplan–Meier curves of the 30-day in-hospital mortality between patients with appropriate and in-appropriate antimicrobial therapy was found by the log-rank test (Figure 1).