Review of: "The importance of active surveillance of carbapenem-resistant Enterobacterales (CRE) in colonization rates in critically ill patients"

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Potential competing interests: The author(s) declared that no potential competing interests exist.

The importance of active surveillance of CRE in colonization rates in critically ill patients

The authors investigated in a retrospective cohort of 1,920 patients admitted to an adult intensive care unit, during a 5-year period, the colonization of CRE using active surveillance. They collected 3,154 swabs, and found CRE colonization in 15.97%. There were 61 infections in CRE-colonized patients (20.54%) vs. 51 (3.14%) in control patients (OR 7.967, p <0.001). The main risk factors for CRE colonization were long-term mechanical ventilation and previous exposure to antibiotics (aminopenicillins, carbapenems, cephalosporins, and fluoroquinolones). The mortality risk for those colonized was higher in those colonized (OR 2.356,p <0.001) and in those who were colonized-infected (OR 2,p = 0.009).

One important point, is to establish the difference in mortality risk between colonized and colonized-infected, this lower in the latter group, contrary to what we expected.

The authors found that some antibiotic groups, mainly aminopenicillins, carbapenems, and fluoroquinolones, were associated with CRE colonization. However, the number of patients who received these antibiotics was too low (less than 5% in CRE-colonized and less than 1% in non-colonized). Although the analysis had statistical significance, the numbers could be too low for a solid conclusion.

Some studies that have explored the risk factors for CRE colonization or infection have been associated with the use, within the previous 3 months, of antipseudomonal antibiotics (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5700345/). Particularly, the selective pressure of carbapenems, even though they are not the only antibiotics that may be involved in patients colonized by CRE, in an environment with a high prevalence of infections by Extended-Spectrum Beta-Lactamase producing (ESBL) strains, is much more intense than in environments with a low production of these enzymes https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4592225/).

The heterogeneity of CRE species could be associated with different mechanisms of resistance, for example,ESBL in combination with porin defects, or efflux-pumps. (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4592225/). Knowing the mechanism of carbapanem-resistance, could be interesting to perform the correlation between whether the bacteria involved in the colonization possesses the same mechanism as that involved in the infection.

The authors found that the mortality risk in colonized patients was (OR 2.356,p <0.001), vs. in those colonized-infected (OR 2, p = 0.009). However, the mortality that we expected should be increased in those who were colonized-infected (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5262497/). There was not an explanation in the discussion for these findings.