Carbapenemase-producing Klebsiella pneumoniae in Perú: Is there a need for further phenotypic and genotypic testing?

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Citation Gonzales Zamora JA. Carbapenemase-producing Klebsiella pneumoniae in Perú: Is there a need for further phenotypic and genotypic testing?. *Medwave* 2018 May-Jun;18(3):e7213

Doi 10.5867/medwave.2018.03.7213

Submission date 5/5/2018
Acceptance date 31/5/2018
Publication date 27/6/2018

Origin Not requested

Type of review reviewed by two external peer reviewers, double-blind

Dear editor:

I read with interest the paper by Quispe Pari et al. about the isolation of a carbapenemase-producing *Klebsiella pneumoniae* in Perú[1]. The authors described the case of a 36-year-old patient from Huancayo, Perú, who was colonized with a KPC-producing *Klebsiella pneumoniae*. The authors used the automated system VITEK 2 for identification and antimicrobial susceptibility, which alerted them of the presence of carbapenem resistance. They also mentioned that the Kirby-Bauer method was used to confirm the production of carbapenemases. This method would be inaccurate, since the detection of carbapenemases is not possible using this technique. The Kirby-Bauer method may only evaluate for carbapenem resistance, but it does not give information about the actual mechanism of resistance, which could be secondary not only to carbapenemase, but also to porin mutations or efflux pumps[2].

For further evaluation of carbapenemases, the authors used the modified Hodge test, which is a proper test to detect most carbapenemases. However, false negatives have been reported in cases of NDM (New Delhi metallo-beta-lactamase)-producing strains and false positives in cases of mixed mechanisms of resistance different from carbapenemases[3]. Recently, many other phenotypic tests have emerged and have clearly showed higher detection rates than the modified Hodge test. Among them, the modified Carbapenem inactivation method and chromogenic tests (Carba NP, RAPIDEC CARBA NP, RAPID CARB BLUE, among others) can be mentioned. They have an overall sensitivity and specificity of 88-99% and 99-100%, respectively [4]. A clear advantage of these methods is their rapid turnaround time, which can vary from 30 minutes to 2 hours[4].

Another point of discussion is the genotypic detection of *KPC* reported by the authors. In their paper, they pointed out that the *Klebsiella* strain was tested by conventional polymerase chain reaction, but they did not mention the type of genotypic test used and no information was given regarding KPC type or gene sequence. Currently, many test for genotypic evaluation are available, such as the FilmArray BCID, the Verigene BC-GN and the X-pert Carba-R. Another test that has become very popular is the next-generation sequencing. This method sequence all the chromosomal and extrachromosomal DNA, allowing identification of genes responsible for carbapenemase, porin, and efflux pump production. This technique also give us data about strain relatedness and transmissibility. However, there is limited information about DNA sequencing of *Klebsiella* strains in Perú.

In Latin American context, the case from Perú published by Horna *et al.* disclosed the presence of a KPC-2 producing *Klebsiella pneumoniae* sequence type ST340[5]. Other reports from Latin America have documented ST258 as the predominant clone. In this sense, the report of Quispe Pari *et al.* is an excellent initiative that will lead to further studies clearly needed in Peru to determine the epidemiology of resistant species.

Notes

Declaration of conflict of interest

The author declares that there is no affiliation or involvement in an organization, industry or entity with a financial or non-financial interest in the subject matter or materials discussed in this manuscript.

Funding

The author declares that there were no external sources of funding.

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