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A pulmonary abscess due to *Klebsiella pneumoniae* carbapenemase 3

Maria Ana Canelas, Tatiana Fonseca

CASE REPORT

An 81-year-old male, with recurrent respiratory tract infections, and multiple antibiotherapy cycles in the previous three months, was admitted in the emergency department, referring fever and dyspnea for one week. Clinical, laboratory and imaging findings led to admission for pneumonia with respiratory failure. On the X-ray (Figure 1): "round hypotransparency, cavitated, in the right lower base". For better characterization it was performed a chest CT scan (Figure 2) that revealed "bulky image, cavitated, with thick walls and polilobulated and heterogeneous, in the right inferior lobe, measuring 66x55 mm". It was first initiated, empirically, clindamycin, for 20 days. Nevertheless, there was not improvement, and so, it was executed a bronchoscopy, allowing the isolation of *Klebsiella pneumoniae* carbapenemase (KPC) (clone ST 147) on the bronchoalveolar lavage. The antibiogram showed: sensitivity to amikacin; CIM Meropenem: ≤8 mg/L; antibiogram: <2 mg/L; CIM colistin: ≤1.5 mg/L. He was then started on meropenem 2 g three-times per day and amikacin 500 mg twice per day, for 30 days, with improvement on the chest CT control (Figure 3), being discharged, after 97 days.

DISCUSSION

After an outbreak of KPC-3 (expressing the gene VIM-1) in our hospital, a protocol of treatment trial was

Maria Ana Canelas[1], Tatiana Fonseca[1]

Affiliations: [1]Internal Medicine Residents, Centro Hospitalar Vila Nova de Gaia/Espinho, Porto, Portugal.

Corresponding Author: Maria Ana Canelas, Internal Medicine Resident, Centro Hospitalar Vila Nova de Gaia/Espinho, Porto, Portugal; E-mail: anavc995@hotmail.com

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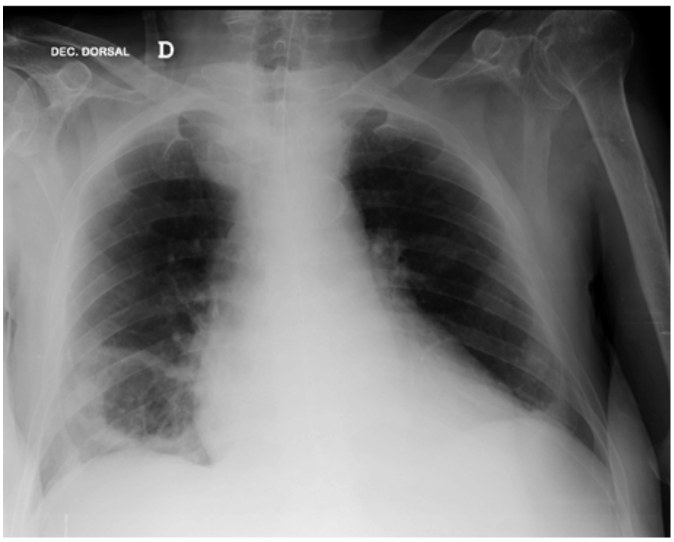

Figure 1: Round hypotransparency, cavitated, in the right lower base.

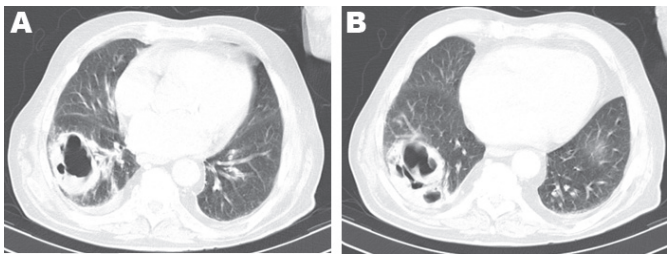

Figure 2: (A, B) "Bulky image, cavitated, with thick walls and polilobulated and heterogeneous, in the right inferior lobe, measuring 66x55 mm."

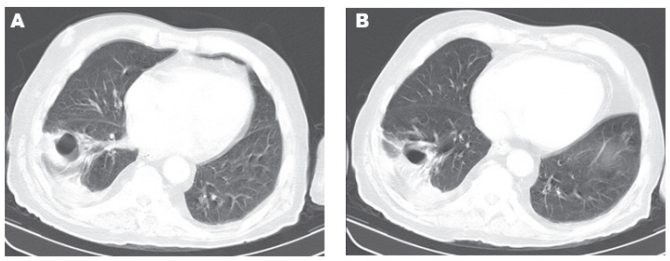

Figure 3: (A, B) Improvement on the chest computed tomography control.

implemented, being of the most value the antibiogram. Misidentification of KPC is common with standard susceptibility testing. The most easily performed confirmatory test is the modified Hodge test, which has been found to be 100% sensitive, although not specific. Definite confirmation of KPC production requires molecular methods such as PCR [1]. There is some debate concerning the appropriate dosage and the most favorable pharmacokinetic/pharmacodynamic profiles in this cases [2, 3], but unfortunately the optimal treatment is unknown. The use of aminoglycosides, polymyxin combinations and tigecycline appeared to have higher success rates. Carbapenem and polymyxin monotherapy had much lower associated success rates [4]. Literature describes a wide range of approaches, from simple conservative treatments associated with specific antibiotic therapy, to surgical intervention, using endoscopic or percutaneous drainage [5]. Elores, a combination of ceftriaxone, disodium edetate and sulbactam, showed high susceptibility to KPC and Extended spectrum beta-lactamase (ESBL) producing pathogens, including the ones expressing VIM-1 [6]. The reason comes for the synergic activity from the Elores combination, with reports of efficacy and safety, and its use can be considered a drug of choice for treating KPC [7]. In our case, we report a more conservative treatment, with the use of high-dose of a carbapenem associated with an aminoglycoside, for a long period, with a favorable outcome. Furthermore, in our case, Elores could not be used, since disodium edetate it is not available in our country, and the antibiogram showed resistance to ceftriaxone.

CONCLUSION

The lack of published material and the emergency of these multirresistente microorganisms it is a challenge in the development of new treatment, control and prevention strategies. In the more serious cases of infections due to KPC, like abscesses, their adequate drainage, when possible, and the most appropriate antibiotic scheme showed a better outcome.

Keywords: Abscess, *Klebsiella pneumoniae* carbapenemase (KPC), Multirresistente microorganisms, Outbreak

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Author Contributions

Maria Ana Canelas – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Tatiana Fonseca – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Guarantor

The corresponding author is the guarantor of submission.

Conflict of Interest

Authors declare no conflict of interest.

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