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Letter to the Editor



First report of an OXA-58 carbapenemase-producing *Acinetobacter baumannii* isolated from urinary tract infection, in Morocco

Acinetobacter baumannii are organisms frequently found in the environment. This bacterium causes several types of infections, such as bacteremia, pneumonia and urinary tract infection [1]. Carbapenem resistance in *A. baumannii* is more often caused by the production of OXA-type carbapenemases and metallo- β -lactamases. The OXA-type carbapenemases are divided into four sub-groups: *bla*_{OXA-23}, *bla*_{OXA-40}, *bla*_{OXA-51} and *bla*_{OXA-58} [2].

An 80-year-old diabetic man was admitted to the Department of Medicine at the referral Hospital Hassan II in Settat city, Morocco. The patient presented a symptom of acute gastroenteritis and was hospitalized between the 1st and 21st November 2014. He had previously required surgical intervention for intestinal obstruction syndrome in the surgery ward in July 2014. Since then, our patient presented chronic diarrhoea with fever (39 °C), along with vomiting and a general physical health deterioration, as well as pancytopenia and an oral candidiasis. The hospitalized patient was initially treated with oral ciprofloxacin 500 mg, twice per day for 10 days (D1 to D10), then he was treated with oral amoxicillin/clavulanic acid 1 g, twice per day for 10 days (D11 to D20) along with metronidazole 500 mg, three times per day for 10 days (D12 to D21); fluconazole (50 mg/day) was added for the oral candidiasis. The patient's clinical state was improved. On the last day of the patient's hospitalization, a urinary tract infection was suspected because the patient felt a burning on urination. A cytobacteriological examination of urine was positive for *A. baumannii*. This bacterium was isolated from one site (urine). Unfortunately, the patient insisted on leaving hospital against his doctor's advice, and interrupted treatment and hospitalization, so we have been unable to search other infection sites caused by this isolate.

A. baumannii isolate was identified using standard microbiological methods [3], while the antibiotic susceptibility profile was determined by using the standard diffusion disc method. The modified Hodge test and the ethylene-diamine-tetra-acetic (EDTA) disc synergy test were performed for the screening of carbapenemases and

Class B metallo- β -lactamases according to the Clinical and Laboratory Standards Institute recommendations [4].

This isolate was resistant to piperacilline-tazobactam, cefotaxime, ceftazidime, ciprofloxacin, and imipenem. The antimicrobial drugs effective against the isolate were colistin, gentamicin and amikacin. The *A. baumannii* isolate was positive for modified Hodge test and screened by conventional single-plex PCR assay for the following carbapenemase genes: *bla*_{VIM}, *bla*_{IMP}, *bla*_{GES}, *bla*_{KPC}, *bla*_{OXA-58}, *bla*_{OXA-40}, *bla*_{OXA-23}, *bla*_{OXA-24} and *bla*_{OXA-51} [5]. The polymerase chain reaction and sequencing analysis revealed the presence of *bla*_{OXA-58} gene. We noted that the *A. baumannii* isolate was detected in the same department in August 2014. In our case, the risk factors responsible for developing such infections were: increasing age, length of hospital stay, previous hospitalization, diabetes mellitus and admission to surgical wards. These risk factors have been reported in previous studies [6].

Since the renal function of the patient was normal and only colistin and amino-glycosides (amikacin and gentamicin) are effective against infection with drug-resistant *A. baumannii*, a colistin and gentamycin or colistin and amikacin combination could have been tested if our patient had not left the hospital against medical advice. Amino-glycoside agents are generally used in combination therapies with another active antimicrobial agent [7,8].

In this report, we describe the first identification of an *A. baumannii* clinical isolate harbouring the *bla*_{OXA-58} gene in Settat city, Morocco. The strain of *A. baumannii* carrying OXA-58 carbapenemase was initially described in France in the outbreak of a hospital infection in 2003, and since then it has been found around the world (Italy, Belgium, Greece, Iran, Turkey) [9].

These bacteria can survive for long periods in the hospital environment, which signifies that the hospital environment serves as a reservoir for multidrug-resistant strains to persist during epidemics. Therefore it is essential to apply strict infection control measures coupled with careful environmental disinfections [10].

Authors' contribution

S Natoubi, A Barguigua, M Timinouni carried out the experimental part of the manuscript. N Zerhouni and S Natoubi participated in the acquisition of data. S Natoubi, A Barguigua, N Baghdad,

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M Timinouni, A Hilali, S Amghar and K Zerouali participated in its design, coordination and helped to draft the manuscript. All authors read and approved the final manuscript.

Conflict of interest

The authors declare that there are no competing interests associated with this work.

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