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Imported infection by CTX-M-15 extended-spectrum beta-lactamase-producing *Shigella sonnei*[☆]



Caso importado de infección por *Shigella sonnei* portadora de betalactamasa de espectro extendido CTX-M-15

Shigellosis is an acute intestinal infection of worldwide distribution caused by different species of the genus *Shigella*, with *Shigella sonnei* being the most prevalent in our area. The existence of strains of *S. sonnei* that produce extended-spectrum beta-lactamases (ESBL) has been widely reported in Asian countries such as China,¹ Japan,² South Korea,³ Iran⁴ or Vietnam.⁵ However, infection due to these bacteria in Spain⁶ is anecdotal. With the increase of tourism to exotic places, in recent years there has been an increase in the number of imported cases of rare infections in Spain or the expansion of strains with resistance to antibiotics, as is the case described below:

A 33-year-old man, born in Spain, went to the emergency department in the summer of 2017 with symptoms that began that morning, characterised by epigastric pain, nausea, vomiting and watery diarrhoea with mucus, accompanied by a fever of up to 38 °C and hyporexia. There was no associated respiratory or urinary symptoms. The patient had returned to Spain six days before from a 23-day trip through Vietnam and Cambodia, with a two-hour layover at Dubai airport. He was accompanied by his wife, who had presented diarrhoeal symptoms during the trip, without fever, lasting seven days. The patient had not received any type of vaccination prior to the trip nor had prophylaxis for malaria been carried out, so a thick blood smear and malaria antigen detection were performed, both resulting in negative tests. In his lab results, he had leukocytosis (23,800 cells/mm³) with marked neutrophilia (21,900 cells/mm³) and an increase in C-reactive protein (73 mg/dl). Samples of faeces and urine were sent to the microbiology department for conventional culture and the patient was discharged with antibiotic treatment (ciprofloxacin) and hydroelectrolytic replenishment.

In the stool culture, non-lactose fermenting bacteria were isolated in the *Salmonella-Shigella* medium which were identified as

S. sonnei by the triple sugar-iron agar (TSI) test, agglutination with specific antisera and biochemical tests. The antibiogram was performed by the broth microdilution method using a Microscan[®] panel, which showed resistance to ampicillin, cephalothin, cefuroxime, cefotaxime, ceftazidime, cefepime, gentamicin, tobramycin, amikacin, co-trimoxazole and nalidixic acid, but susceptibility to norfloxacin, ciprofloxacin and levofloxacin. It had an extended-spectrum beta-lactamase phenotype with inhibition by clavulanic acid. The type of beta-lactamase was determined by real-time PCR (Progenie Molecular[®]) and subsequent Sanger sequencing resulting in beta-lactamase of the CTX-M-15 type.

The case presented is the first imported case described in Spain of *S. sonnei* producing CTX-M-15. ESBL-producing *S. sonnei* infections in Spain are scarcely collected in the literature, with the exception of one native case⁶ reported in 2011. Up to seven types of beta-lactamases of the CTX-M type have been described in the genus *Shigella*: CTX-M-2, CTX-M-3, CTX-M-14, CTX-M-15, CTX-M-55,² CTX-M-57⁷ and CTX-M-64, with beta-lactamase CTX-M-15 being the one reported most frequently in Asian countries such as Vietnam, Korea, China, Japan, Iran, Turkey and Lebanon.⁸ The case presented highlights the importance of tourism to exotic places in the expansion of ESBL-producing strains in rare genera in Spain.

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