A case of otitis externa caused by non-01/non-0139 *Vibrio cholerae* after exposure at a Mediterranean bathing site

Sir,

*Vibrio cholera* is a gram-negative rod that is ubiquitous in marine environments (mostly estuaries and coastal areas) and freshwater. Although more than 200 serogroups of *Vibrio* have been identified, only a small subset of *V. cholera* strains (O1 and O139 mainly) are responsible for enteric disease and outbreaks that cause nearly 95,000 deaths every year [1]. *Vibrio* strains non-O1/non-O139 (VCN) are especially associated with mild gastroenteritis but also with bacteriemia, and wound, ear and other site infections [2]. We report a rare case of otitis externa due to non-O1/non-0139 *Vibrio cholera* acquired after exposure in Mediterranean waters. We take advantage of this atypical circumstance to make a review of cases reported in Spain.

In September 2017, a 35-year-old Spanish male was referred to an otolaryngologist due to acute otitis externa. His past medical history was unremarkable except for bilateral recurrent otitis media in childhood that required tympanostomy tubes. Since then, he has had no other ear infections until early in 2017, when he began to suffer from several periodic otitis externa episodes. In August of that year, he started with a smelly purulent discharge from his left ear, associated with otalgia with no other accompanying symptoms. Otoscopic examination revealed an intact tympanic membrane and an otic swab was taken. Empiric therapy with ciprofloxacin eardrops was prescribed for 10 days and ear aspirations were performed twice during the treatment period. He recalled having taken a 15-day trip to Tarragona (Catalonia) in July 2017, where he bathed in the sea. He denied having travelled outside of Spain in the past 5 years.

The swab was cultivated on sheep blood agar, chocolate agar, McConkey agar and Chromagar plates, which were incubated at 37°C in an atmosphere containing 5% CO₂. After the first 24 hours, colonies grew in all the bacterial culture media, and haemolysis was observed on the blood agar plate (figure 1). Gram staining showed gram-negative curved rods (figure 2) and there was a positive oxidase test result. The organism was identified as *Vibrio cholera* by Matrix-Assisted Laser Desorption Ionization Time-Of-Flying Mass Spectrometry (MALDI-TOF MS) using the MALDI-Biotyper 3.1 software (Bruker Daltonik GmbH, Bremen, Germany). The identification of *V. cholerae* was further confirmed by pyrosequencing three variable regions (V1, V3, and V6) of the 16S rRNA gene with

Correspondence: Marta Díaz-Menéndez
Infectious Diseases Unit, Department of Internal Medicine. University Hospital La Paz-Carlos III, C/Sinesio Delgado, nº 10. 28029, Madrid (Spain).
Tel: +0034 628 337 899.
Fax: + 0034 917 336 614
Email: marta.diazmenendez@gmail.com
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...contributed to the displacement of this pathogen to more northern areas [10]. For that reason, a future increase in the frequency of isolation of this pathogen in microbiological samples might be expected.

Clinicians should be aware that non-O1/O139 *V. cholerae* might be the cause of extra-intestinal infections in patients exposed to fresh or marine water, especially if they have an underlying medical condition. Thus, *V. cholerae* should be taken into account in the differential diagnosis of ear infections, even in healthy people.

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CONFLICT OF INTEREST

The authors declare that they have no conflicts of interest.

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