



# Enfermedades Infecciosas y Microbiología Clínica

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## Scientific letters

### An outbreak of acute norovirus gastroenteritis in a boarding school in Zamora, Spain



### Brote de gastroenteritis aguda por norovirus en un colegio interno en Zamora, España

To the Editor,

Norovirus (NoV) is the leading cause of outbreaks of gastroenteritis in humans worldwide, especially in children in the post-rotavirus vaccine era.<sup>1</sup> Significantly, the frequency has also increased in institutionalized and hospitalized population, immunocompromised patients and extreme ages.<sup>2</sup> Investigations of outbreaks have shown that the majority of transmissions are by direct contact with individuals carrying the virus, water, aerosols, contaminated food, and due to environmental contamination.<sup>3</sup> The incubation period is short (12–48 h), showing a higher incidence in autumn and winter. Typical clinical manifestations are vomiting and diarrhoea, and paediatric patients are more liable to have dehydration requiring hospitalization.<sup>1</sup> Genetically, NoV has been classified into six genogroups (genogroup I [GI] to genogroup VI [GVI]), of which GI, GII, and GIV can infect humans.<sup>4</sup> The genogroups are further classified into 9 GI, 22 GII, and 2 GIV genotypes.<sup>4,5</sup> Although the GII.4 genotype is currently responsible for 60–90% of outbreaks worldwide,<sup>1</sup> new GII.4 variants emerge every 2–3 years and become the dominant strains during the new season.<sup>6</sup>

On October 2014 an outbreak of acute gastroenteritis in a boarding school in Zamora (Castile and Leon, Spain) was reported to the local public health authority (LPHA). An outbreak investigation was conducted to identify the most likely causative agent and mode of transmission and to implement control measures. Given the importance of an accurate and early result, we used for the first time at our Laboratory of Microbiology molecular techniques for the NoV detection and we assessed, at the same time, their utility for the diagnosis of subsequent outbreaks.

LPHA inspected the school premises and conducted a retrospective analysis using a structured questionnaire on demographic data, symptoms, food consumption and other possible risk factors. An outbreak case was defined as a person attending the affected institution who presented diarrhoea, vomiting or abdominal pain from 14 to 16 October 2014.

A total of 36 students (69.4% male, median age 15 years (12–19)) developed symptoms, whereas staff was not affected. The overall attack rate was 19.9% with no significant sex-related differences. The most frequent symptoms were abdominal cramps (97.2%), vomiting (91.7%) and neurological symptoms such as headache (83.3%). Diarrhoea (52.8%) and fever (19.4%) were less frequent. Fig. 1 shows the number of cases by date of onset of symptoms. The outbreak was self-limiting in 3 days and nobody was hospitalised.

Stool samples from 2 cases were screened for the most frequent enteropathogenic bacteria by selective and differential media and

for rotavirus and enteric adenoviruses antigen by an immunochromatographic technique (ICT) (Balea Norovirus®). Simultaneously, samples were tested by a real-time reverse transcription polymerase chain reaction (RT RT-PCR) (Xpert® Norovirus, Cepheid) for qualitative detection and differentiation of NoV GI/GII and by an ICT for the same genogroups. In both samples NoV ICT was negative but the RT RT-PCR detected NoV GII. *Salmonella*, *Shigella*, *Yersinia*, *Aeromonas*, *Hafnia* and *Campylobacter* and viral enteropathogens were discarded. Food samples were negative for enteropathogenic bacteria (no viruses were studied) at the LPH laboratory.

Different outbreaks due to NoV in closed institutions have been reported in Spain. Navarro et al.<sup>7</sup> described NoV GII affecting patients, staff members, and their relatives in a long-term-care unit and suggesting a person-to-person spread. The same genogroup was detected in Majorca, associated with the children's club of a hotel.<sup>8</sup> A food-borne NoV outbreak was reported among staff at a hospital in Barcelona<sup>9</sup> and a water-borne one in a factory in the Basque Country.<sup>10</sup>

Epidemiological features, microbiological results and no isolation of other pathogens confirmed that the outbreak was caused by NoV GII, with probable person-to-person transmission. This was the first time a NoV outbreak in Zamora was laboratory confirmed, although source remained unclear. We emphasize that the presence of NoV should always be suspected and investigated in gastroenteritis outbreaks including those of closed institutions in the absence of the usual pathogens. Given the low sensitivity of the ICTs for NoV detection, molecular techniques could be prioritized in case of epidemiological suspicion. Therefore, we recommend the implementation of molecular techniques, with high sensitivity and specificity, no time-consuming management and fast results, despite the high cost, to determine the actual frequency of NoV both on sporadic cases as well as outbreaks.

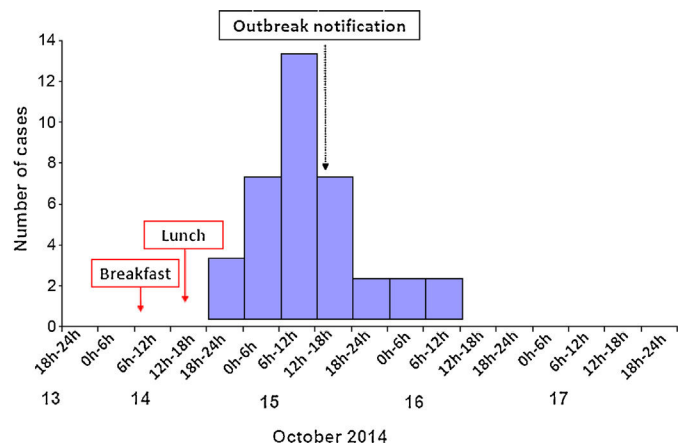


Fig. 1. Number of cases of gastroenteritis by date of onset of symptoms, Zamora, October 2014 (epidemic curve).

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## Sepsis respiratoria por *Moraxella atlantae*: utilidad de la espectrometría de masas en la identificación de especies poco frecuentes



### Respiratory sepsis due to *Moraxella atlantae*: Utility of mass spectrometry to identify rare species

Presentamos el caso clínico de un varón de 77 años con antecedentes de ex-tabaquismo, fibrilación auricular, enfermedad pulmonar obstructiva crónica (EPOC) grado IV de la clasificación GOLD con exacerbaciones frecuentes, con ingreso hospitalario por exacerbación, 2 semanas antes. Estaba en tratamiento con acenocumarol e inhaladores de formoterol y glicopirronio. El paciente acudió a urgencias por fiebre, disnea y tos con expectoración verdosa.

Al examen físico destacaba frecuencia respiratoria 28 rpm, tensión arterial 100/55 mmHg, frecuencia cardíaca 85 lpm, temperatura 38,3 °C, crepitantes en base pulmonar derecha y roncus en ambos campos superiores. El resto del examen físico era normal. En el análisis de sangre destacaba hemoglobina 14,4 mg/dl, leucocitos  $10,70 \times 10^3/\mu\text{l}$ , creatinina 0,71 mg/dl, sodio 128 mEq/l, proteína C reactiva 3,6 mg/dl y presión arterial de oxígeno 65 mmHg. La radiografía de tórax mostró una consolidación basal derecha. Se extrajeron hemocultivos y se comenzó antibioterapia empírica con meropenem ante sospecha de sepsis de origen respiratorio.

La evolución durante el ingreso en medicina interna fue favorable, desapareciendo la fiebre a las 48 h. Uno de los hemocultivos resultó positivo tras 4 días de incubación. Se realizó técnica de Gram que mostró bacilos gramnegativos y se subcultivó en medios habituales.

Se procesaron las colonias mediante el sistema espectrometría de masas *Matrix-assisted laser desorption ionization time-of-flight* (MALDI-TOF), dando como resultado *Moraxella atlantae* (*M. atlantae*) con un score de 2,1.

Se mantuvo cobertura antibiótica con meropenem iniciada en urgencias, con buena evolución. Tras 7 días de ingreso, el paciente fue dado de alta a su domicilio.

**Discusión**

Dentro del género *Moraxella* encontramos más de 20 especies de cocos gramnegativos aerobios, inmóviles y oxidasa positivos<sup>1</sup>. *M. atlantae* es un microorganismo oportunista que forma parte de la flora saprófita humana. Se trata de un microorganismo extremadamente difícil de encontrar en hemocultivos de forma aislada<sup>2</sup>. Únicamente encontramos 2 casos en la literatura con hallazgo casual de *M. atlantae* en hemocultivos realizados por fiebre sin foco aparente, en pacientes con otros diagnósticos principales: El primero, una paciente de 25 años diagnosticada de lupus eritematoso sistémico, y el segundo, una mujer de 31 años diagnosticada de adenocarcinoma rectal<sup>2,3</sup>. Ambos presentaron buena evolución clínica con el tratamiento empírico pautado.

*M. atlantae* es un bacilo corto gramnegativo, inmóvil, que crece en medios de cultivo habituales. Es catalasa y oxidasa positivo, no acidificador de azúcares, no reduce nitratos y consume acetato y nitrato. Presenta actividad fosfatasa alcalina y pirrolidona carboxilato peptidasa positivas<sup>2</sup>. La dificultad de aislamiento mediante métodos clásicos y su sensibilidad a antibioterapia habitual, hace que sea infradiagnosticado.