

BRIEF REPORT

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# Acute gastroenteritis due to *Arcobacter butzleri*: an emerging pathogen

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## Abstract

*Arcobacter butzleri* is a foodborne pathogen that has been positioned as an emerging cause of bacterial enteritis. It can affect any type of person although vulnerable people are more susceptible. In addition, resistance to several antibiotics has been described, which is a problem for antimicrobial empirical treatment and this makes it a threat to public health.

Seven isolates of this pathogen were collected during 2024. Susceptibility studies were performed on first-line antibiotics for the treatment of gastroenteritis in our epidemiological environment. Resistance rates higher than 25% were observed for all antimicrobials tested, except erythromycin. Based on these data, it would be necessary to carry out a study of antimicrobial resistance profile of this microorganism for their treatment and control.

**Keywords** *Arcobacter butzleri*, Enteritis, Emerging pathogen, Public health

## Introduction

Although is not one of the main cause of foodborne illness, *Arcobacter butzleri* has been positioned as an emerging zoonotic pathogen causing enteritis in recent years [1–3].

The genus *Arcobacter* belongs to the *Arcobacteriaceae* family, order *Campylobacteraceae* and it has been described as the cause of acute bacterial gastroenteritis with bloody stools, profuse diarrhea, abdominal distension and, in some cases, as the cause of bacteremia [4]. Their worldwide incidence is probably underestimated due to a lack of technology used for its identification, but, in some countries, it has become one of the most

commonly isolated bacterial species from the stools of patients with intestinal infections [5]. Usually, the clinical presentation is self-limiting diarrhea that responds favorably to oral rehydration.

The transmission to humans can occur through contaminated food, mainly with raw poultry meat and water. It can survive and adapt to cold conditions, which has significant implications for food safety [3, 6].

Although vulnerable groups such as children and immunosuppressed people are more susceptible, anyone can be infected [4].

Before 2024, no infection caused by this pathogen has been diagnosed in Hospital Clínico San Carlos. However, during that year, there were seven cases of patients with *Arcobacter butzleri* isolates from stool samples, with gastrointestinal symptoms and in which no other attributable cause has been found. All patients had bloody watery diarrhea and most of them also had stomach pain.

Therefore, we have proposed to analyze the resistance profiles since as described in the literature, this pathogen

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**Table 1** Sensitivity results of isolates, expressed as a percentage of the total (%)

Antibiotics	Number of resistant isolates / % resistance
Amoxicillin/clavulanic acid	(2) / 50
Cefotaxime	(1) / 25
Erythromycin	-
Tetracycline	(2) / 50
Ciprofloxacin	(2) / 50

is acquiring increasingly relevance from a clinical point of view.

Materials and methods

Seven strains of *Arcobacter butzleri* have been isolated in stool samples from patients with acute gastroenteritis during 2024.

The samples were processed at the microbiology department following standardized protocol. They were cultivated in selective and differential culture media, including *Campylobacter* agar (BioMerieux, Marcy L'Etoile, France) for 48 h, 42°C in microaerophilia conditions (BD Gaspak™ EZ Campy Pouch System). All positive culture were identified by MALDI-TOF mass spectrometry (Bruker Biotyper®), considering valid the results with a Score ≥ 2. The sensitivity study were carry on by the disk diffusion method on Mueller-Hinton agar enriched with horse blood (BioMerieux, Marcy L'Etoile, France) and 0.5 McFarland suspension were used as initial inoculum. For the interpretation of sensitivity/susceptibility, the breakpoints established by EUCAST (European Committee on Antimicrobial Susceptibility Testing) 2024 [7] for *Campylobacter spp* were used, due to taxonomic proximity, as there are no specific breakpoints for this bacteria [5].

Results

Of the seven *Arcobacter butzleri* analyzed, three were isolated from women and four from men. The mean age of the patients was 56.4 years, with the youngest patient being nine years old and the oldest being ninety-four years old.

Two of them were obtained from immunosuppressed patients, both of them kidney transplant recipients (one of these patients required hospitalization). Of the remaining five, two had travelled to South American countries (Peru and Mexico). Three remaining patients we did not have relevant epidemiological data. Only four patients received antibiotic treatment: two ciprofloxacin, one cefotaxime and one metronidazole. The clinical evolution of the patients achieved a favorable recovery, both those who received treatment and those who did not.

Only four of all isolates could be studied for sensitivity test, the other three did not show growth when performing disk diffusion method. The results are shown in Table 1. The results obtained showed high resistance rates to all antibiotics tested, except for erythromycin, which was the most active against all the isolates.

Conclusions

There are several studies in which high rates of in vitro resistance of *Arcobacter spp.* to antimicrobials have been observed both in environmental and clinical samples [8], which may be involved in a public health problem [2]. The obtained results were agree with the aforementioned studies, with the isolates presenting a high rate of resistance, greater than 25% to first-line antibiotics for the treatment of gastroenteritis such as beta-lactams and fluoroquinolones [4]. Therefore, this bacteria should be considered during differential diagnosis of human gastroenteritis and the isolation and study of the in vitro resistance of these microorganisms is essential for their treatment and control.

For this reason, traditional methods, such as culture, cannot be completely replaced by multiplex polymerase chain reaction techniques, as the diagnosis of some pathogens, including *Arcobacter butzleri*, not currently incorporated in these tests, would be missed.

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Author contributions

CGS: investigation, formal analysis, writing original draft; JML: investigation, writing - review; CGC: investigation, writing - review; ADIGC: writing- review.

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Data availability

No datasets were generated or analysed during the current study.

Declarations

Ethics approval and consent to participate

Not applicable.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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