



SCIENTIFIC LETTERS

In vitro activity of azithromycin in faecal isolates of *Aeromonas hydrophila*^{☆,☆☆}



Actividad *in vitro* de azitromicina en aislados fecales de *Aeromonas hydrophila*

Dear Editor:

Aeromonas is a genus of gram-negative bacilli that are similar in morphology to the *Enterobacteriaceae*. Numerous species have been described, the most frequent of which are *A. caviae*, *A. veronii* and, above all, *A. hydrophila*. These bacteria are transmitted through contaminated fresh and salt waters. In humans, they are most commonly involved in wound infections, systemic disease (usually in patients with underlying conditions) and especially acute gastroenteritis (AGE).¹ In Spain, *Aeromonas* is considered the third most frequent enteropathogenic bacterium identified in patients with AGE, following *Campylobacter* and *Salmonella*, accounting for 6–7% of cases²; in the Valencian metropolitan area, the incidence of AGE due to *Aeromonas* is of 20 cases per 1,000,000 inhabitants.³ Recently, the European Society for Paediatric Gastroenterology Hepatology and Nutrition (ESPGHAN) and the European Society for Paediatric Infectious Diseases (ESPID) have recommended oral azithromycin for the treatment of moderate to severe gastroenteritis based on the bacterial enteropathogens that are most commonly involved.⁴ However, due to the lack of data on *Aeromonas* species, we do not have any evidence of the actual usefulness of this antimicrobial. The aim of our study was to assess the *in vitro* activity of azithromycin against clinical isolates of *Aeromonas*.

We conducted a prospective descriptive study of clinical isolates of *A. hydrophila* from patients with AGE during 2015. We isolated the bacterial strains by culturing stool samples in selective CIN agar (Becton-Dickinson). Bacterial identification and antibiotic susceptibility testing were performed by means of standardised and widely used tech-

niques, specifically with NC70 panels of the commercially available MicroScan WalkAway[®] system (Siemens). Furthermore, we used Etest[®] strips (bioMérieux) to determine the minimum inhibitory concentration (MIC) in a McFarland 0.5 bacterial suspension; and interpreted the results applying the epidemiological cut-off values established by the European Committee on Antimicrobial Susceptibility Testing (EUCAST) for *Shigella* and *Salmonella* (sensitivity: MIC < 16 mg/L). We analysed the cases by on time, age and sex as well as the microbiological characteristics of the isolated strains.

During the period under study, *A. hydrophila* was isolated from a total of 50 clinical samples. The median age of the patients was 8 years (range, 0–89 years). Fifty-four percent were children (78% aged less than 4 years) and 32% elderly. Fifty-two percent were male. All isolates came from patients in primary care, and no patients reported having been hospitalised. The isolates did not exhibit a significant seasonal pattern, although 58% of detections occurred in summer or spring. The percentage of isolates that showed *in vitro* sensitivity to antibiotics commonly used to treat AGE were: 0% for ampicillin, 10% for amoxicillin/clavulanic acid, 92% for cefuroxime, 100% for cefotaxime, 100% for ciprofloxacin, 100% for gentamicin and 96% for cotrimoxazol. All isolates were considered sensitive to azithromycin; the determined MICs ranged between 0.5 and 8.0 mg/L, and the MIC₅₀ (concentration required to inhibit 50% of bacterial strains) and the MIC₉₀ (for inhibition of 90% of strains) were 3.0–6.0 mg/L, respectively.

Antibiotic treatment is not always indicated for AGE caused by *Aeromonas*, so the use and choice of antimicrobials should be based on the symptoms and age of the patient, the site of infection (intestinal or extraintestinal), the immune status of the patient and the local prevalence of different pathogens and patterns of drug resistance. The antibiotic sensitivity of *Aeromonas* has been studied mainly in environmental bacterial strains,⁵ but few studies have analysed clinical isolates and the use of azithromycin. In our experience, *A. hydrophila* showed a high sensitivity to azithromycin *in vitro*, although it would be advisable to have international committees on microbiology to establish clinical breakpoints to determine the sensitivity or resistance to azithromycin, as has been done for *Salmonella* and *Shigella*. Given its easy dosage (one dose a day), low toxicity and evidence of the high sensitivity of *Campylobacter* and also *Salmonella*⁶ to it, azithromycin has been established as the empirical treatment of choice in cases of bacterial AGE that require antibiotherapy.

[☆] Please cite this article as: Jover-García J, Pérez-Doñate V, Colomina-Rodríguez J. Actividad *in vitro* de azitromicina en aislados fecales de *Aeromonas hydrophila*. An Pediatr (Barc). 2017;86:226–227.

^{☆☆} Previous presentation: This study was presented at the XX Congreso Nacional SEIMC; May 26–28, 2016; Barcelona, Spain.

References

1. Tomás JM. The main *Aeromonas* pathogenic factors. *ISRN Microbiol.* 2012;2012:256261.
2. Álvarez M, Buesa J, Castillo J, Vila J. Diagnóstico microbiológico de las infecciones gastrointestinales; 2008. Available in: <http://www.seimc.org/contenidos/documentoscientificos/procedimientosmicrobiologia/seimc-procedimientomicrobiologia30.pdf> [accessed 01.06.16].
3. Esteve C, Alcaide E, Giménez MJ. Multidrug-resistant (MDR) *Aeromonas* recovered from the metropolitan area of Valencia (Spain): diseases spectrum and prevalence in the environment. *Eur J Clin Microbiol Infect Dis.* 2015;34:137–45.
4. Guarino A, Ashkenazi S, Gendrel D, lo Vecchio A, Shamir R, Szajewska H, European Society for Pediatric Gastroenterology, Hepatology, and Nutrition; European Society for Pediatric Infectious Diseases. European Society for Pediatric Gastroenterology, Hepatology, and Nutrition/European Society for Pediatric Infectious Diseases evidence-based guidelines for the management of acute gastroenteritis in children in Europe: update 2014. *J Pediatr Gastroenterol Nutr.* 2014; 59:132–52.
5. Woodring J, Srijan A, Puripunyakom P, Oransathid W, Wongstitwilairoong B, Mason C. Prevalence and antimicrobial susceptibilities of *Vibrio*, *salmonella*, and *Aeromonas* isolates from various uncooked seafoods in Thailand. *J Food Prot.* 2012;75:41–7.
6. Pérez-Doñate V, Borrás-Mañez M, Domínguez-Márquez V, Navalpotro-Rodríguez D., Colomina-Rodríguez J. Is azithromycin really a therapeutic option in intestinal salmonellosis. *An Pediatr.* 2015;83:346–7 [Article in Spanish].

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2341-2879/

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Light and noise: Environmental factors in intensive care units[☆]



Factores ambientales de luz y ruido en las unidades de cuidados intensivos

Dear Editor:

Intensive care units (ICUs) are settings characterised by very sophisticated equipment that require specialised facilities and in many instances produce environments with poor natural light and background noise.^{1–3} In these high-tech units, the activities involved in advanced life support and subsequent care may predispose to discomfort. Katherine Kolcaba defined comfort as the state experienced through having the human needs for relief, ease, and transcendence addressed in four contexts: physical, psychospiritual, sociocultural, and environmental.⁴

Aware of the importance of these factors in the care of critically ill patients, we reviewed the standards on light and noise in ICUs and studied the characteristics of these two variables in the PICU of a tertiary care hospital.

We measured environmental light with a CEM DT-1308 light metre in luxes (lx). Measurements were made in the morning and at night and taking into account the three types of lighting that predominate in the unit under study: natural light, white/cool light and warm/yellow light. We defined light colour based on colour temperature expressed

as Kelvin (K). Based on this parameter, cool light corresponds to white tones exceeding 5000 K (fluorescent lights), while warm light corresponds to yellow tones of less than 3300 K (halogen lights).⁵

We measured environmental noise with a PCE-999 type 2 audiometer in decibels (dB). We recorded the noise level every 2 h for 6 days.

The references used for comparison were the European Union Lighting Standard for Interior Lighting (EN 12464.1) and, for environmental noise, guidelines of the American Academy of Pediatrics (AAP) and the Council on Environmental Health, as well as the standards proposed by the World Health Organization (WHO). We ought to note that in order to avoid the Hawthorne effect (the alteration of behaviour in subjects aware of being observed) we performed these measurements without the knowledge of the health care staff in the unit.

We collected a total of 28 light measurements and 72 environmental noise measurements. The recommended light levels are 100 to 1000 lx during the day and 20 lx at night. The median natural light was 51.7 (0–207.2) luxes. As for direct cool lighting, the daytime median was 195.6 (88.1–347.2) luxes compared to 159.6 (57.0–206.7) at night. In comparison, our analysis of indirect warm light resulted in a median of 67.5 (11.4–193.7) luxes during the day versus a median of 27.4 (13.2–72.4) at night. All daytime light measurements complied with the standards, although nighttime luminosity far exceeded the recommended luxes.

When we analysed the environmental noise in the ICU, we found a mean 57.64 ± 3.67 dB during the day versus 55.48 ± 3.17 at night. Both levels exceed the daytime threshold of 45 dB and the nighttime threshold of 35 dB recommended by the reviewed standards.

Therefore, we can conclude that in order to improve environmental factors in our unit, we must continue to promote the use of natural light or, in its absence, warm lighting

[☆] Please cite this article as: Bosch A, Falcó A, Santaolalla M, Domínguez MC, Jordan I. Factores ambientales de luz y ruido en las unidades de cuidados intensivos. *An Pediatr (Barc).* 2017;86:227–228.