Bacteremia caused by *Herbaspirillum huttiense* in a newborn☆

Bacteriemia por Herbaspirillum huttiense *en un paciente neonato*

We present the case of a two-month-old boy, born prematurely at 26 + 5 weeks (35 corrected weeks) weighing 757 g. The patient was in respiratory distress and had a possible right intraventricular haemorrhage, along with a persistent ductus arteriosus, finally closed by surgery.

In view of the worsening of his clinical condition, samples from peri-catheter skin and two serial blood cultures were sent to the microbiology department. The following were the most relevant analytical data: CRP 24.9 mg/l, Hb 8.7 g/dl, neutrophils $9.22 \times 10^3/\mu l$, haematocrit 29.5%, platelets $75 \times 10^3/\mu l$. The first blood culture extracted from the peripheral vein was positive after 23 h of incubation and the second after 17 h. Subcultures were made in blood agar and chocolate agar at 37 °C and a 5% CO_2 atmosphere. In the Gram staining, Gram-negative bacilli were observed. The microorganism was identified as *Herbaspirillum huttiense* by mass spectrometry (MALDI-TOF MS, Bruker Daltonics, Bremen, Germany) with a score of more than 2.00, using the centrifugation protocol of positive blood culture[1] used in the department for both samples. After 24 h of incubation, a non-fermenting oxidase-positive Gram-negative bacillus grew in the peri-catheter skin culture and in the subcultures of the blood cultures, finally identified as *H. huttiense*.

The sensitivity study was carried out using the WIDER I automated system (Francisco Soria Melguizo, S.A., Madrid, Spain). The MicroScan panel for non-fermenting Gram-negative bacilli type 71 was used (Beckman Coulter®) and then incubated at 37 °C for 24 h. The isolate was resistant to colistin (MIC: >4 mg/l) and amikacin (MIC: ≤8 mg/l), but sensitive to trimethoprim-sulfamethoxazole (MIC: ≤2/38 mg/l), meropenem (MIC: ≤1 mg/l), ceftazidime (MIC: ≤1 mg/l), levofloxacin (MIC: ≤1 mg/l) and minocycline (MIC: ≤4 mg/l). The cut-off points for the interpretation of the MIC obtained were in line with the CLSI (Clinical and Laboratory Standards Institute) recommendations for Gram-negative non-fermenters (M100-S24).[2] After the microbiological sensitivity report, it was decided to change the antibiotic treatment from ceftriaxone to cefotaxime,[2] which was later changed to meropenem. Both the repeat peripheral-blood blood cultures taken two and five days later and the subsequent culture of the catheter were sterile.

Herbaspirillum spp. belongs to the class of Betaproteobacteria of the order of *Burkholderiales*, which includes *Burkholderia* spp., *Ralstonia* spp. and other endophytic bacteria that colonise the internal tissues of plants without causing apparent disease. This phylogenetic proximity has led to mistaken identification or incorrect attribution to *Burkholderia cepacia* complex, so there may be a significant underestimation of the prevalence of this bacterium. This bacterium was described 25 years ago in isolates from plants, including maize, wheat, rice, sugar cane, banana and pineapple, as well as from the soil and potable water distribution systems. It is a Gram-negative bacillus, oxidase-, catalase- and urease-positive, with flagellar motility.[3,4]

Herbaspirillum spp. are opportunistic pathogens which colonise the airways of patients with lung disease, such as cystic fibrosis, and are capable of causing bacteremia and sepsis in immunocompromised patients, particularly people with cancer or undergoing haematopoietic stem cell transplantation.[5]

A search in PubMed entering the words "*Herbaspirillum* spp.", "Bacteremia" and "newborn" did not find any reported cases of *H. huttiense* bacteremia in neonates.

In our case, it is important to highlight the child's prematurity and low birth weight as predisposing factors contributing to the patient's susceptibility to developing this infection.

After isolation of this microorganism, genetic studies were performed to rule out cystic fibrosis, but no mutations were detected. However, levels of immunoreactive trypsinogen were somewhat elevated, compatible with the patient's clinical situation, and the sweat test should be carried out whenever possible by age.

References

1. Romero Gómez MP, Mingorance J. The effect of the blood culture bottle type in the rate of direct identification from positive cultures by matrix-assisted laser desorption/ionisation time-of-flight (MALDI-TOF) mass spectrometry. J Infect. 2011;62:251–3.
2. Performance Standards for Antimicrobial Susceptibility Testing; Twenty-Fourth Informational Supplement. Clinical and Laboratory Standards Institute; 2014. M100-S24.
3. Baldani JI, Baldani V.L.D., Seldin L, Döbereiner J. Characterization of *Herbaspirillum seropedicae* gen. nov., sp. nov., a root-associated nitrogen-fixing bacterium. Int J Syst Bacteriol. 1986;36:86–93.
4. Schmid M, Baldani JI, Hartmann A. The genus *Herbaspirillum*. In: The Prokaryotes. New York: Springer; 2006. p. 141–50.
5. Chemaly RF, Dantes R, Shah DP, Shah PK, Pascoe N, Ariza-Heredia E, et al. Cluster and sporadic cases of *Herbaspirillum* species infections in patients with cancer. Clin Infect Dis. 2015;60:48–54.

Maria Gracia Liras Hernández, Patricia Girón de Velasco Sada, Iker Falces Romero, María Pilar Romero Gómez*

Servicio de Microbiología y Parasitología Clínica, Hospital Universitario La Paz, Madrid, Spain

* Corresponding author.
E-mail address: mpromero.hulp@salud.madrid.org (M.P. Romero Gómez).

2529-993X/

DOI of original article: https://doi.org/10.1016/j.eimc.2018.12.011.

☆ Please cite this article as: Liras Hernández MG, Girón de Velasco Sada P, Falces Romero I, Romero Gómez MP. Bacteriemia por *Herbaspirillum huttiense* en un paciente neonato. Enferm Infecc Microbiol Clin. 2019;37:491.