Enferm Infecc Microbiol Clin. 2017;35(6):388–392

Enfermedades Infecciosas y Microbiología Clínica

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Scientific letters

Bilateral abducens nerve palsy as the initial clinical manifestation of meningococcal meningitis☆

Parálisis bilateral del VI par craneal como manifestación inicial de la meningitis meningocócica

Dear Editor,

Abducens nerve palsy is considered the most common cranial nerve paralysis in childhood.[1] The most frequent aetiology is traumatic or tumoural.[2] Knowledge of the anatomy of the nerve allows the lesion to be located and its study to be focused. After emerging from the protuberance at the pontobulbar junction, it ascends ventrally to the brainstem, until it rotates at the apex of the petrous temporal bone under the petroclinoid ligament. It penetrates the cavernous sinus, enters the orbit through the superior orbital fissure and remains in a lateral position until it reaches the lateral rectus muscle.[2] This long path means that the ABDUCENT nerve can be injured directly by focal processes or indirectly in relation to the intracranial hypertension that pulls on the nerve. In this situation, the paralysis of the nerve, whether uni- or bilateral, is a false localising sign, since the dysfunction is distant in relation to the expected location, defying the clinical-anatomical correlation on which the neurological examination is based.[3]

We present a case of meningococcal meningitis B whose onset was bilateral abducens nerve palsy related to intracranial hypertension.

An 11-year-old male who visited the emergency department because of a headache which developed over 24 hours and isolated fever peak of 39 °C on the previous day. As the only personal history, he had episodic headaches with nonspecific characteristics, but this time the pain was more intense and accompanied by photophobia, sonophobia and dizziness, without frank instability. In addition, he mentioned cervicalgia that he justified by a poor posture. Neurological examination was completely normal, with no meningeal signs, and the vital signs showed a temperature of 37.1 °C and blood pressure of 116/74. Pain improved after the administration of oral metamizole and he was discharged with the diagnosis of migraine headache. The next day he returned to the emergency department due to a recurrence of the headache and double vision in the horizontal plane. It was not accompanied by nausea or vomiting. The overall examination was normal, without showing any cutaneous lesions. On neurological examination the presence of bilateral abducens nerve palsy (Fig. 1A and B) and positive meningeal signs were noted. The fundus of the eye did not show papilledema and the level of consciousness was normal. The temperature was 37.2 °C. Blood analysis showed 14,300 leukocytes/μl (11,500 neutrophils/μl) and CRP of 20 mg/dL. The cranial CT scan was normal and a lumbar puncture was performed, which obtained a whitish cloudy liquid with an opening pressure of 52 cm of H_2O, with 3702 cells/mm^3 (80% PMN), 18 mg/dL of glucose (capillary glycaemia 92 mg/dL) and 0.54 g/L of proteins. Blood cultures were taken, and empiric treatment with ceftriaxone (100 mg/kg/day) and dexamethasone (0.6 mg/kg/day distributed in 4 doses). The Gram stain did not show pathogens, but in the LCR culture a *Neisseria meningitidis* of the serotype B grew. The cranial NMR showed a leptomeningeal uptake of gadolinium within the sulci of both hemispheres, as expected from purulent meningitis. At 48 hours of evolution the patient recovered complete mobility of the left side of the ABDUCENS nerve, and the right side 5 days later, being discharged with a normal neurological examination after completing antibiotic treatment.

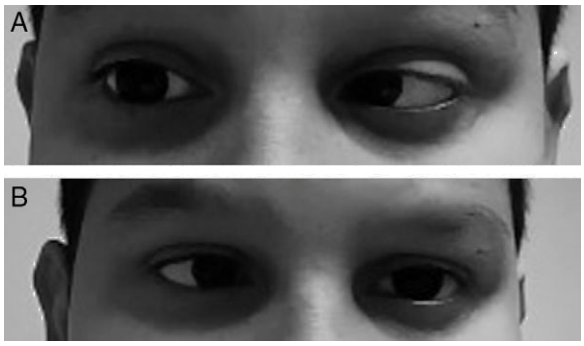

Fig. 1. The patient presents an abduction limitation of the right eye in the right lateral gaze (A) and abduction of the left eye in the left lateral gaze (B).

Invasive meningococcal infection is commonly associated with serotypes A, B and C of *Neisseria meningitidis.* Meningitis is its most common form of presentation, reaching 80% of the cases.[4] The clinical course is usually fulminant, and is characterised by high fever, headache and neck stiffness. These manifestations vary depending on microbiological factors (bacterial load and circulating endotoxin) and the host (innate and acquired immune response). This could explain the exceptional nature of the presented case, since it did not begin with the typical triad, but directly with an intracranial hypertension syndrome with abducens nerve palsy, with insufficient evolution time to develop papilledema. The rapid resolution of the patient's symptoms and the absence of contrast uptake in the cranial NMR ruled out that the neuropathy was due to direct invasion. The cranial nerves may be affected in the course of bacterial meningitis. In a series of 110 cases of invasive meningococcal disease, the proportion of patients with a lesion of the ABDUCENT nerve reached 4.5%.[5] However its involvement is not expected as an isolated clinical onset, with no other signs of suspected infection. Hence the importance of detailed neurological examination

☆ Please cite this article as: Camacho Salas A, Rojo Conejo P, Núñez Enamorado N, Simón de las Heras R. Parálisis bilateral del VI par craneal como manifestación inicial de la meningitis meningocócica. Enferm Infecc Microbiol Clin. 2017;35:388–389.

in the diagnostic approach to the patient. In the event of abducens nerve palsy, whether uni- or bilateral, it is necessary to consider the possibility of intracranial hypertension and to request the necessary complementary tests (neuroimaging and lumbar puncture) to establish its aetiology.

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2529-993X/

Bacteremia due to *Leptotrichia trevisanii* after an allogeneic bone marrow transplant☆

Bacteriemia por Leptotrichia trevisanii *en una paciente sometida a trasplante alogénico de médula ósea*

We present the case of a 62-year-old woman diagnosed with a haematological disease, monoclonal gammopathy, in 2006, which developed into quiescent multiple myeloma in 2009 and symptomatic myeloma (IgG kappa, ISS 1) in 2011. She underwent autologous transplant of peripheral blood haematopoietic progenitors (AHSCT), after which she suffered a relapse in October 2014, with a discreetly hypocellular bone marrow, with 7% intermediate maturation plasma cells. After receiving 10 sessions of radiation therapy and 4 cycles of VTD (bortezomib + thalidomide + dexamethasone), the patient was admitted to the Haematology Department of the Hospital Universitario Central de Asturias in April 2015 to receive an allogeneic transplant of haematopoietic precursors from a HLA-identical sibling, conditioned with fludarabine. Furthermore, at the time of admission, she had a persistent catarrhal clinical picture with cough, without expectoration, fever, or dyspnoea, so she was given levofloxacin (500 mg IV/24 h).

The procedure was performed without incident and prophylaxis for graft-*versus*-host disease was initiated with methotrexate and cyclosporin. In the history recorded on the following days, the patient reported oral pain, with a WHO grade 3 mucositis being detected that required parenteral nutrition. On the sixth day post-transplant, she started with a fever of 39 °C, and the blood work showed a deep medullar aplasia (leukocytes $0.00 \times 10^3/\mu l$, red blood cells $2.76 \times 10^6/\mu L$, haemoglobin 8.7 g/dl, platelets 13,000/μL), with liver and kidney function tests showing values within normal limits. Blood cultures were taken (BD BACTEC® Plus Aerobic/Anaerobic F), and treatment with piperacillin-tazobactam was started (4 g IV/6 h), according to the hospital's antibiotic therapeutic protocol for febrile neutropenia.

At 32 h, the anaerobic bottles were positive, while the aerobic bottles were positive at 57 h, gram-negative bacilli with a spindle-shaped appearance were observed in staining. In subcultures in a *Brucella*, chocolate blood agar some greyish colonies with dry appearance grew at 18 h. Identification was performed using MALDI-TOF, obtaining a score of 2.1 for *Leptotrichia trevisanii*. This result was confirmed through 16S rRNA sequencing, comparing the sequence obtained with the GenBank® database and using the BLAST program (https://blast.ncbi.nlm.nih.gov/Blast.cgi).

The antibiotic sensitivity was performed by broth microdilution, according to the reference method for anaerobic micro-organisms and the breakpoints indicated in the Clinical and Laboratory Standards Institute (CLSI). The micro-organism was sensitive to the following antibiotics: penicillin (MIC = 0.12 mg/L), amoxicillin (MIC = 1 mg/L), piperacillin (MIC ≤ 16 mg/L), amoxicillin-clavulanic (MIC = 0.5/0.25 mg/L), piperacillin-tazobactam (MIC = 16/4 mg/L), cefoxitin (MIC = 1 mg/L), imipenem (MIC = 0.12 mg/L), chloramphenicol (MIC = 8 mg/L), clindamycin (MIC ≤ 0.5 mg/L), tetracycline (MIC ≤ 2 mg/L) and metronidazole (MIC ≤ 0.5 mg/L). Moxifloxacin (MIC = 8 mg/L) was classed as resistant. There are no breakpoints in the CLSI for erythromycin, but the MIC obtained (64 mg/L) was high.

The first case of bacteremia by *Leptotrichia trevisanii* was described by Tee et al. in a male with acute myeloid leukaemia in 2001,[1] and at least 12 cases have been published since then.[2–8] The patients involved suffered from some type of haematologic disease, except one, who had oesophageal cancer with metastases in the liver, lung and lymph nodes,[2] which shows the opportunistic nature of this micro-organism. All of them described a situation of febrile neutropenia as a predisposing factor of sepsis, accompanied by the appearance of lesions in the oropharyngeal mucosa. These constitute a route for bacterial translocation,[2,3] which can trigger bacteremia in situations of medullar aplasia.

Phenotypic batteries are not able to identify *Leptotrichia* spp., since it presents a low biochemical reactivity.[3,4] In addition, the comparison between the different strains described demonstrates the difficulty in identifying the micro-organism based solely on biochemical tests, due to the variability of the results (Table 1). In our case, the API® Rapid/ID 32 A (bioMérieux®) system was used. The result of the number profile obtained (0411400000) was *Clostridium acetobutylicum* (87.2%), which cannot be correlated with the gram-negative spindle bacilli observed under the microscope.

The MALDI-TOF mass spectrometry has proved to be a cost-effective and rapid tool in the final identification of micro-organisms for which conventional methods are inconclusive. Martín-Gutiérrez et al. managed to correctly identify the *Leptotrichia trevisanii* species just 2 h after the blood culture was

DOI of refers to article: http://dx.doi.org/10.1016/j.eimc.2016.09.010

☆ Please cite this article as: Sabater Cabrera C, Fernández Blázquez A, García Carús E. Bacteriemia por *Leptotrichia trevisanii* en una paciente sometida a trasplante alogénico de médula ósea. Enferm Infecc Microbiol Clin. 2017;35:389–390.