

Current neurological mortality rates in infectious endocarditis[☆]

Mortalidad actual por causa neurológica en endocarditis infecciosa

Dear Editor:

Infectious endocarditis (IE) is a serious disease with a high global mortality rate, despite the advances made in diagnosis and treatment over the last few years.¹ Neurological complications (NC) are frequent and constitute one of the main causes of morbidity and mortality. Their incidence ranges from 20% to 40% depending on the series.²

The aim of this clinical note is to present the NC incidence and global and specific mortality due to neurological causes observed in a current consecutive series of patients with IE treated in a tertiary hospital.

To that end, we carried out a prospective review of all patients diagnosed with IE according to the modified Duke criteria³ who died in Hospital Universitario Donostia (HUD) and Policlínica-Gipuzkoa in San Sebastián. The study period was March 2008 to December 2010. The HUD has 1150 beds and provides care to 350 000 inhabitants. It is also the tertiary hospital of reference for the whole province of Guipúzcoa. IE was diagnosed and IE surgery was indicated according to the criteria established by European guidelines.⁴ NC was diagnosed based on the patient's symptoms and confirmed using CT or MRI neuroimaging tests.

Between March 2008 and December 2010, 104 cases of IE were diagnosed. Seventeen of these patients died (16.3%): five (29.4%) due to neurological causes and the remaining twelve due to other causes.

The five patients who died of a neurological cause comprised three men and two women; mean age was 73 years and methicillin-sensitive *Staphylococcus aureus* was the microbial cause of death in four cases (80%). The mitral valve was involved in two cases and the aortic valve in another two, with both mitral and aortic involvement observed in the fifth case. Neurological cause of death was ischaemic stroke in four patients (80%), as well as being the reason for admission in two cases. The remaining patient (20%) died of haemorrhagic stroke. Average elapsed time between admission and death was 21 days. Two patients had undergone prior surgery (40%).

Of the 104 patients, neurological symptoms were identified in 19 (18.3%) and seven patients in that group died. Mortality in the group of patients with NC was 36.8%, compared to 11.76% (10/85) in the patient group with no neurological symptoms.

These results show that despite advances in NC diagnosis, antibiotic treatments, and early surgical intervention, the disease is currently a major cause of in-hospital mortality and morbidity.

Systematic use of CT or MRI neuroimaging techniques in several studies has shown that CNS involvement in cases of IE is far more frequent than expected, reaching 80% in some series.^{5–7} Involvement of the CNS can influence diagnosis, prescription of antibiotic treatment, and the indication for surgery in IE cases. Duval et al. showed that early systematic use of head MRI scans modified the diagnostic classification and the treatment approach in 28% of the cases in a series of 130 patients.⁵ However, it remains to be determined whether modifications following diagnosis of subclinical neurological involvement can alter the course of IE and patient prognosis. In addition, current guidelines do not recommend systematic use of neuroimaging techniques in managing IE.

S. aureus is the causative agent associated with a higher incidence of cerebrovascular events, both symptomatic and asymptomatic.^{2,6,8} Some authors believe that it could be very useful to systematically perform neuroimaging tests in cases of IE due to *S. aureus*, although there is no evidence to support this.

In short, NC accounts for a high percentage of morbidity and mortality in IE and further studies are needed to help determine if the systematic use of MRI can modify the treatment approach for these patients and thus decrease both NC-related morbidity and general and neurological mortality in IE.

References

1. Hoen B, Alla F, Selton-Suty C, Béguinot I, Bouvet A, Briançon S, et al., Association pour l'Etude et la Pré-vention de l'Endocardite Infectieuse (AEPEI) Study Group. Changing profile of infective endocarditis: results of a 1-year survey in France. *JAMA*. 2002;288:75–81.
2. Heiro M, Nikoskelainen J, Engblom E, Kotilainen E, Marttila R, Kotilainen P. Neurologic manifestations of infective endocarditis: a 17-year experience in a teaching hospital in Finland. *Arch Intern Med*. 2000;160:2781–7.
3. Li JS, Sexton DJ, Mick N, Nettles R, Fowler Jr VG, Ryan T, et al. Proposed modifications to the Duke criteria for the diagnosis of infective endocarditis. *Clin Infect Dis*. 2000;30:633.
4. Habib G, Hoen B, Tornos P, Thuny F, Prendergast B, Vilacosta I, et al. Guidelines on the prevention, diagnosis and treatment of infective endocarditis (new version 2009): the task force on the prevention, diagnosis and treatment of infective endocarditis of the European Society of Cardiology (ESC). *Eur Heart J*. 2009;30:2369–413.
5. Duval X, Jung B, Klein I, Brochet E, Thabut G, Arnoult F, et al. Effect of early cerebral magnetic resonance imaging on clinical decisions in infective endocarditis: a prospective study. *Ann Intern Med*. 2010;152:497.
6. Cooper HA, Thompson EC, Laurenço R, Fuisz A, Mark AS, Lin M, et al. Subclinical brain embolization in left-sided infective endocarditis: results from the evaluation by MRI of the brains of patients with left-sided intracardiac solid masses (EMBOLISM) pilot study. *Circulation*. 2009;120:585–91.
7. Snygg-Martin U, Gustafsson L, Rosengren L, Alsiö A, Ackerholm P, Andersson R, et al. Cerebrovascular complications in patients with left-sided infective endocarditis are common: a prospective study using magnetic resonance imaging and neurochemical brain damage markers. *Clin Infect Dis*. 2008;47:23.

[☆] Please cite this article as: de la Riva P, de Arce Borda A, Díez González N, Goenaga Sanchez MA. Mortalidad actual por causa neurológica en endocarditis infecciosa. *Neurología*. 2014;29:312–313.

8. Dickerman SA, Abrutyn E, Barsic B, Bouza E, Cecchi E, Moreno A, et al. The relationship between the initiation of antimicrobial therapy and the incidence of stroke in infective endocarditis: an analysis from the ICE Prospective Cohort Study (ICE-PCS). *Am Heart J*. 2007;154:1086–94.

P. de la Riva^{a,*}, A.M. de Arce Borda^a, N. Díez González^a, M.A. Goenaga Sanchez^b

^a Servicio de Neurología, Hospital Donostia, San Sebastián, Spain

^b Unidad de Enfermedades Infecciosas, Hospital Donostia, San Sebastián, Spain

* Corresponding author.

E-mail address: patricia.delariva@gmail.com

(P. de la Riva).

Mononeuritis multiplex due to leprosy: A case of atypical presentation^{☆,☆☆}

Mononeuropatía múltiple por lepra: descripción de un caso con presentación atípica

Dear Editor:

Leprosy remains a major health problem in developing countries.^{1,2} *Mycobacterium leprae* is the causative agent, and although it has been isolated in every part of the body except the central nervous system, it most commonly infects the peripheral nerves and skin. Peripheral neuropathy is elicited by the infection or by accompanying immunological events. It may be long-lasting and give rise to important residual symptoms on occasions.³ In some patients, neural involvement is the predominant or sole symptom.⁴ We present a case of imported leprosy that initially manifested with significant neural involvement and skin lesions of atypical location. Sural nerve biopsy was necessary to assign the diagnosis.

Our patient was a 19-year-old man from Mauritania who had emigrated to Spain 4 years previously. He came to our clinic due to a 2-year history of progressive sensory symptoms, mostly distal, in all 4 limbs and motor deficit in upper limbs. Neurological examination showed asymmetrical weakness in the upper limbs, predominantly in the region of the left ulnar nerve, together with amyotrophy of the hand (ulnar claw) (Fig. 1). Weakness of the lower limbs was predominantly distal, with mild impairment of toe walking. We found generalised hypereflexia with areflexia in the left upper limb. We also observed decreased tactile sensitivity in both hands and a burn injury on the left hand. No nerve hypertrophy was observed. Skin examination revealed no lesions on the face or limbs, but we did find 2 hypopigmented lesions with preserved sensitivity on the patient's back.

An electromyographic and electroneurographic study showed an axonal demyelinating sensorimotor neuropathy

in several nerves of all 4 limbs compatible with moderate to severe mononeuropathy multiplex. The affected area was asymmetrically distributed, with the left arm being the most impaired.

Examination of the sural nerve biopsy revealed damage to nerve fascicle structure due to a significant inflammatory infiltration of T and B cells (CD45, CD3 and CD20) into the epineurium, perineurium, and endoneurium. We found numerous vacuolated cells presenting punctiform structures partially revealed by the Ziehl-Neelsen stain technique and more clearly using the Fite-Faraco technique (Fig. 2). An overall loss of myelinated nerve fibres was also observed.

Based on these findings, the patient was diagnosed with leprosy and started treatment with rifampicin, clofazimine, and dapsone, according to recommendations by the World Health Organization (WHO) for multibacillary leprosy.⁵ The patient's condition improved with no reactions during treatment and a significant improvement in both motor and sensory deficit except in the left ulnar nerve.

The cardinal signs pointing to a diagnosis of leprosy are hypopigmented, anaesthetic skin lesions usually located on colder areas of the body (limbs and face), thickened nerves and Fite-Faraco stain revealing alcohol-fast bacilli in a skin biopsy, skin smear, or nerve biopsy specimen.⁶

According to WHO criteria,⁷ leprosy is classified as either paucibacillary or multibacillary according to the number of lesions and findings from the biopsy. The Ridley-Jopling classification, based on the host's immune response, classifies leprosy cases as tuberculoid or lepromatous, with different intermediate forms also appearing.⁸ Following both of



Figure 1 Left hand displaying ulnar claw and burn on palm.

[☆] Please cite this article as: Pedraza Hueso MI, Hinojosa Mena-Bernal C, Hernández-Lain A, Guerrero Peral AL. Mononeuropatía múltiple por lepra: descripción de un caso con presentación atípica. *Neurología*. 2014;29:313–314.

^{☆☆} Part of this study was presented in poster format at the 63rd annual meeting of the Spanish Society of Neurology, Barcelona, November 2011.