Accelerated emergence from a nontraumatic minimally conscious state with levodopa/carbidopa

Ernesto Bancalari, MD, PhD, Alejandro Rabinstein, MD, Francisco Machiavello, MD, and Alejandro Desmaison, MD

Neurology: Clinical Practice December 2018 vol. 8 no. 6 541-542 doi:10.1212/CPJ.0000000000000508

Correspondence

Dr. Bancalari
Ernesto.bancalari@gmail.com

Figure 1 Aneurysm

Nontraumatic rupture of a left posterior inferior cerebellar artery aneurysm with subsequent intraventricular hemorrhage and acute hydrocephalus, affecting mainly the fourth ventricle with substantial adjacent edema.

A 62-year-old woman was admitted to our hospital in coma following the nontraumatic rupture of a left posterior inferior cerebellar artery aneurysm with subsequent intraventricular hemorrhage and acute hydrocephalus, affecting mainly the fourth ventricle with substantial adjacent edema (figure 1). Her Glasgow Coma Scale score was 3/15 and physical examination showed left hemiparesis, absent corneal and oculovestibular reflexes. Dexamethasone (4 mg q6h) and mannitol (1 g/kg initially, then 0.5 mg/kg q6h) were started, and a frontal bilateral trephination with external ventricular drainage was performed. Initial sedation was waned and discontinued 7 days later. The right and left ventricular drains were removed 9 and 15 days after placement, respectively, when a head CT scan showed reduction of the intraventricular hemorrhage and hydrocephalus (figure 2). Transcranial Doppler on days 2 and 8 showed no vasospasm. Serial EEGs on days 14, 21, and 28 showed no ictal activity. The aneurysm was successfully embolized 34 days after admission.

Clínica Anglo Americana (EB, FM), Lima, Peru; Mayo Clinic (AR), Rochester, MN; and Universidad San Martín de Porres (AD), Lima, Peru

Funding information and disclosures are provided at the end of the article. Full disclosure form information provided by the authors is available with the full text of this article at Neurology.org/cp.

Figure 2 Head CT scan

Head CT scan shows reduction of the intraventricular hemorrhage and hydrocephalus.

Evidence of a minimally conscious state was noted 20 days after admission when the patient unequivocally moved her tongue when requested; a JFK Coma Recovery Scale–Revised (CRS-R) score of 5/23 was assigned. Her neurologic improvement stalled after 3 weeks, barely achieving discrete hand movements with mild left spasticity (CRS-R 9/23).

Levodopa/carbidopa 100/25 mg PO TID was started, even though no rigidity or extrapyramidal signs had been noted throughout the patient's hospitalization; 4 days later, she had spontaneous eye opening and improved hand movement. Three days later, muscular strength improved to 4+/5 in distal upper and lower limbs. Eight days thereafter, she said her first comprehensible words (CRS-R 14/23). Four weeks after achieving this milestone, when the patient was able to interact with the examiner through hand signs, the levodopa/carbidopa dose was tapered down. This was followed by progressive regression in her communication skills, which prompted us to return to the initial dose, recovering

previously achieved communication abilities. No associated side effects were noted.

Various reports have documented recovery from disorders of consciousness following treatment with dopaminergic agonists.^{1,2} The rationale behind its use involves the stimulating role of dopamine in the reticular activating system mediating arousal. Most of these occurred, however, in traumatic brain injury, and the success of therapy depended partially on parkinsonian features, which our patient lacked. It is probable that during the early hemorrhagic event, cerebral edema selectively injured dopaminergic pathways. Our case argues for the use of dopamine agonists in patients with minimally conscious state of nontraumatic etiology, even in the absence of parkinsonism. Further investigation is warranted to clarify specific prognostic factors of response.

Author contributions

E. Bancalari: design and conceptualization of report, data acquisition. A. Rabinstein: critical revision of the manuscript for intellectual content. F. Machiavello: design and conceptualization of report, data acquisition. A. Desmaison: analysis and interpretation of data.

Study funding

No targeted funding reported.

Disclosure

E.M. Bancalari reports no disclosures. A. Rabinstein serves on the external committee for adverse event adjudication for PREVAIL trial/CAP2 registry; serves as Associate Editor for *Neurocritical Care* and on the Editorial Board for *CONTINUUM*; receives publishing royalties for *Practical Neuroimaging in Stroke* (Elsevier, 2009) and *What to Do? Neurocritical Care* (Oxford, 2016); and has received an unrestricted research grant from DJO Global. F. Machiavello and A. Desmaison report no disclosures. Full disclosure form information provided by the authors is available with the full text of this article at Neurology.org/cp.

Received April 28, 2018. Accepted in final form July 16, 2018.

References

1. Cossu G. Therapeutic options to enhance coma arousal after traumatic brain injury: state of the art of current treatments to improve coma recovery. *Br J Neurosurg* 2014; 28:187–198.
2. Matsuda W, Komatsu Y, Yanaka K, Matsumura A. Levodopa treatment for patients in persistent vegetative or minimally conscious states. *Neuropsychol Rehabil* 2005;15: 414–427.