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Living without frontal lobes: Treatment and rehabilitation of disorders of consciousness

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Abstract

Professionals designing neurorehabilitation therapy for patients with altered consciousness face medical challenges involved in caring for individuals without a functioning frontal lobe. While there is a heightened interest in methods designed to restore consciousness in such patients, the process is complex, due in part to the diverse aetiology of these states of consciousness, and also to the intricate cerebral connectivity involved in their treatment. We explore the neural basis of the minimally conscious state (MCS), identifying neurons that remain active and/or inactive at resting state, compared to patients with severe neurocognitive disorders (SND), who show signs of awareness. We present case studies on patients with frontal lobe deafferentation who showed signs of emergence from the vegetative state after neurorehabilitation using The Combined Method Therapy (CMT). Neurorehabilitation therapy, pharmacology, stimulation, and neuroimaging techniques are applied jointly to adjust treatment and medication. We found that this combined approach to treatment promoted connectivity between posterior and anterior cortical region supporting emergence from the vegetative state.

Biography

Prof. Leon-Carrion is a professor of Neuropsychology and director of the Human Neuropsychology Laboratory at the University of Seville, Spain, and head of the R&D&I Department at the Center for Brain Injury Rehabilitation (C.RE.CER.), Seville. He has spent over 30 years committed to improving brain injury rehabilitation programs, while serving on boards of international brain injury societies and scientific journals. He has published six books, neuropsychology textbooks, and over 40 articles on brain injury rehabilitation in journals of repute. He also served as a reviewer for the U.S. Department of Defence TBI Grant Program and is currently vice-chairman of the IBIA.