

A CASE REPORT OF VISUAL AND MOTOR RECOVERY AFTER COGNITIVE SENSORIMOTOR REHABILITATION IN A PATIENT WITH CORTICAL BLINDNESS

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This was a case study in Italy, in which the regular clinical rehabilitation was administered in the Centro Studi di Riabilitazione Neurocognitiva, Villa Miari, Vicenza, Italy. The Center (the scientific director and the ethical committee) approved of the study. The patient has signed informed consent.

BACKGROUND AND PURPOSE: Spontaneous partial visual recovery happens 1-6 months after onset of cortical blindness. Further recovery can occur with visual rehabilitation. However, currently there is no gold standard therapy; clinical outcomes are variable and rarely translate into improvements in daily life activities (ADL). The purpose of this study was to demonstrate feasibility and potential value of cognitive sensorimotor rehabilitation in a patient with cortical blindness.

CASE DESCRIPTION: A 48 year old female patient, with severe cortical blindness and tetraplegia caused by hypoxia after cardiac arrest, was dependent in ADL and distinguished shapes and colors after 1.5 year of standard visual rehabilitation. She then started cognitive sensorimotor rehabilitation for 8 months, 5 days/week, 3 hours/day, consisting of discrimination exercises correlating sensory and visual information to reconstruct vision and improve daily life motor performance. Clinical assessments and PET imaging were performed before and after rehabilitation.

OUTCOMES: Visual performance significantly improved: Her field of view increased to 15*10cm; she recognized and described objects; watched television; and used her cell phone. She improved 45 points (65/100) on the “Barthel ADL index”, reflecting independence in self-care and improved walking. She increased 23 points (48/58) on the “Motor Evaluation of Upper Extremity in Stroke Patients” (MESUPES), i.e. she moved her arm and hand accurately. She improved 23 points (57/70) on the “Warwick-Edinburgh Mental Well-being Scale” (WEMWBS), i.e. she felt self-reliant. Before rehabilitation, PET imaging confirmed reduced glucose metabolism in the visual cortex. After rehabilitation, glucose metabolism increased in the occipital, frontal and parietal cortex. Correlating sensory and visual information during rehabilitation possibly provides an alternative route to reactivate preserved visual areas.

CONCLUSIONS: This study demonstrates feasibility of cognitive sensorimotor rehabilitation in a patient with cortical blindness, who experienced an impressive clinical visual and motor recovery with marked ADL improvement, more than 2 years after onset.