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Case report

Rotigotine effect in prolonged disturbance of consciousness. Brief report of two cases

Fabio Massimo Corsi[1], *Carmela Gerace*[2], *Monica Ricci*[2]

[1] Advanced Unit of Neurology, UOC Neurology, Department of Neurosciences, Head and Neck Pathology - Neurology Unit. San Camillo - Forlanini Hospital, Roma, Italy; [2] Department of Neurosciences, Head and Neck Pathology - Neurology Unit. San Camillo - Forlanini Hospital, Roma, Italy

Summary. Two patients with post-coma reactivation deficiency who showed a "dramatic" response to rotigotine therapy are described. They had suffered from prolonged coma due to lesions in the mesencephalic ventral tegmental area. The authors believe that rotigotine effect in these cases could be due to restoration of dopaminergic transmission in medial frontal areas previously "de-afferented" from the lesions. Some comatous patients may experience a prolonged difficulty in recovering a normal state of consciousness. This phenomenon may be due to dysfunction of amynergic activating pathways connecting brainstem to the frontal cerebral cortex. In particular, dysfunction of dopaminergic pathways from the mesencephalon to the frontal cortical areas may be responsible for clinical pictures characterized by preserved alertness and total loss of interactions with the surrounding environment; the so called "waking coma" cases. (www.actabiomedica.it)

Key words: disturbance of consciousness, akinetic mutism, dopamine, rotigotine

Case Report

A 65-year-old man arrived at the emergency room because of acute consciousness disturbance. TC of the brain showed a hemorrhage in the mesencephalic region. His conditions were very critical (GCS = 3), even if the breathing function was normal. Family members were informed of a probable bad outcome over the course of hours.The patient was admitted to intensive care unit and then, after a few days, to a normal care unit. He remained stable for several days. After 20 days he recovered a waking state and he was transferred to a rehabilitation department for post-comatose patients. At that time the neurological examination showed a clinical picture of "acinetic mutism": the patient was alert but he was'nt able to make any movement either spontaneous or on request and the verbal expression was impossible. Occasionally he was able to follow the examiner's movements with his eyes. Considering the location of the lesion, it was decided to start transdermal rotigotine 2 mg/24 h, a dosage to be increased to 4 mg/24 h in the following week. In the following days the patient began making spontaneous movements and progressively improved his interaction with the environment; he was then transferred to a neuromotor non-intensive rehabilitation unit and after about 4 months he came back to our outpatient clinic with a normal mental state and left-sided mild hemiparesis which however allowed him to walk independently. Up to now he remained stable in follow-up visits. The second case regard a 50-year-old woman, after a bereavement in the family, spent many days locked in home refusing visits and food. After a couple of weeks she was found at home in a serious confusional state with delusions. A diagnosis of psychotic episode was made and she was treated with neuroleptics drugs for a long time. Delusions improved but two months after neuroleptic withdrawal she developed a total inability to move and to talk as for a severe auto-activation deficiency: he remained motionless on the bed, eyes open, without any interaction with the environment. A brain MRI showed an area of signal hyperintensity in

the mesencephalic region, possibly as a result of previous vascular or metabolic injury. Based on the clinical picture and the site of the cerebral lesion, 2 mg/24 h transdermal rotigotine therapy was started. The patient improved after a few days with reappearance of spontaneous movements; She was dismissed and she gradually resumed her job. After about 8 months she was able to return to work on a regular schedule as an employee.

Discussion

Case 1 describes a case who showed lack of awakening from prolonged coma with a prolonged "minimal consciousness state". Case 2 describes a patient with a clinical state of "akynetic mutism", which could not be simply explained as a collateral effect of neuroleptic therapy. In both cases there was a mesencephalic lesion in the region of the ventral tegmental area. Dopaminergic pathways departing from this area are directed to basal forebrain and they are considered to play a fundamental role in finalized behavior (1 - 4). They are component pathways of the medial forebrain bundle (MFB) which projects to mesial frontal regions and is crucial for the self-activation behaviour (4). Treatment with rotigotine may have improved the condition of these patients restoring dopaminergic transmission in "deafferented" mesial frontal areas (5). Rotigotine treatment may be actually helpful in patients with delayed awakening from coma or prolonged self-activation deficiency with akynetic mutism (5). The presence of mesencephalic or nucleobasal lesions in these cases may suggest the indication to rotigotine treatment, but however, in our opinion, in cases like these, due to cerebral injuries of various origin (traumatic, vascular, hypoxic, etc) a trial of dopaminergic therapy with rotigotine could be performed because a dysfunction of the dopaminergic pathways in the MFB could occur even if there are no lesions demonstrated by the usual imaging techniques.

Conflict of interest: Each author declares that he or she has no commercial associations (e.g. consultancies, stock ownership, equity interest, patent/licensing arrangement etc.) that might pose a conflict of interest in connection with the submitted article

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Correspondence:
Fabio Massimo Corsi, MD specialist in neurology,
Director of Advanced Unit of Neurology, UOC Neurology,
Department of Neurosciences, Head and Neck Pathology -
Neurology Unit. San Camillo - Forlanini Hospital,
Circonvallazione Gianicolense 87, 00152 Roma RM Italy
Tel. +39 06 58701
E-mail: crsfba@libero.it