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Immunoediting of stress-induced behaviors using cell-based technologies

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Introduction: Negative consequences of acute and chronic stress caused by information overload, environmental problems, natural disasters, man-made disasters, military clashes, and acts of terrorism have become increasingly evident in recent decades. They can lead to a painful "breakdown" of socio-biological adaptation mechanisms, a decrease in adequacy in assessing the environment, and, as a consequence, the formation of disturbances in the psycho-emotional sphere, manifested in the development of behavioral disorders (aggression and depression). Therapy for behavioral disorders does not provide a complete cure, apparently due to the formation of a "vicious circle" that can only be broken by normalizing the regulatory relationship between the central nervous system and the immune system. One way to solve this problem is to develop new methods of therapy based on immunological approaches. The method of choice may obviously be immunotherapy with autologous immune cells with a certain, including in vitro modulated, functional activity.
Objectives: The aim of the study was to investigate the possibility of obtaining a positive psychoneuroimmunomodulatory effect in aggressive and depressive-like animals by transplanting immune cells, the functional activity of which was in vitro modulated by a psychoactive substance (PAS).
Methods: Male (CBAxC57Bl/6)F1 mice aged, in which aggressive or depressive-like states were formed under the influence of long-term social stress, were used as donors and recipients in the experiments. Immune cells for transplantation were obtained from a suspension of donor's splenocytes, cultured in vitro with PAS (chlorpromazine or caffeine, respectively) and then intravenously administered to syngeneic recipients. In the control group of animals, cell preparation and transplantation were carried out under similar conditions, except that the latter were cultured without the presence of PAS. In recipients the parameters of the nervous and immune systems functional activity were recorded.
Results: Transplantation of in vitro PAS-modulated splenocytes to recipients with stress-induced behavior patterns resulted in targeted changes in their motor and exploratory activity in the Open field test, motor activity in the Porsolt test, and decreased anhedonia in recipients with a depressive-like phenotype, recorded against the background of changes in the content of a number of pro- and anti-inflammatory cytokines IL-1β, IL-2, IL-4, IL-6, IL-10, IFNγ, TNFα in pathogenetically significant brain structures. In recipients, a positive change in the parameters of the immune system functional activity were also revealed.
Conclusions: The possibility of immunoediting stress-induced forms of behavior by transplanting in vitro PAS-modulated immune cells, which have a positive psychoneuroimmunomodulatory effect in the body of syngeneic recipients, has been demonstrated.

Disclosure of Interest: None Declared

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Differential Diagnosis of Neuropsychiatric Presentations: A Combined Assessment of Psychiatric and Neurological Symptoms

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Introduction: Assessing psychiatric and neurological symptoms in emergency settings is crucial for accurate differential diagnosis. Psychosis, seizures, and cognitive impairment often overlap with various medical and psychiatric conditions, making early and precise identification essential for differentiating between potential causes, guiding appropriate treatment, and improving patient outcomes.
Objectives: This report presents a clinical case with initial suspicion of psychotic symptoms accompanied by convulsive features to emphasize the importance of differential diagnosis in neuropsychiatric manifestations.
Methods: This report details a clinical case involving a 26-year-old woman with no prior psychiatric or neurological history, who presented to the emergency department with headaches, insomnia, and unusual behaviors. Three weeks earlier, she had a right parietal focal epileptic seizure and was being treated with lacosamide 100 mg every 12 hours. Post-seizure, she exhibited symptoms such as disorientation, memory lapses, thought blocking, soliloquies, disorganized thinking, and insomnia. Due to suspected psychotic symptoms, the emergency department consulted psychiatry. Both psychiatry and neurology were involved in her evaluation due to the neuropsychiatric nature of her symptoms. The differential diagnosis considered was a first psychotic episode, postictal psychosis, or encephalitis. She was initially prescribed anxiolytics and antipsychotics, including olanzapine 2.5 mg and clonazepam 0.5 mg. Complementary tests, including an EEG, showed right parietal epileptiform discharges and diffuse encephalopathy, but no evidence of status epilepticus. These findings, combined with convulsive symptoms, suggested a neurological origin, leading to her admission to the neurology department.
Results: Further investigation revealed right temporoparietal cortical thickening on brain MRI, indicative of encephalitis, and lumbar puncture results were positive for anti-NMDA receptor antibodies. The patient was then treated with high-dose corticosteroids, later replaced by plasmapheresis every two days. A gynecological consultation was performed to exclude ovarian pathology, and a body CT scan was ordered to rule out tumor-related conditions. Although her condition has stabilized, it is still early to fully assess the effectiveness of the treatment.
Conclusions: This case emphasizes the critical importance of neuropsychiatric differential diagnosis. The overlapping symptoms of psychosis and cognitive impairment can mimic various conditions, making accurate diagnosis challenging. The collaboration between psychiatry and neurology was essential in distinguishing between psychiatric disorders and anti-NMDA receptor encephalitis. Timely and precise diagnosis enabled targeted treatment, demonstrating the need for a multidisciplinary approach in managing complex neuropsychiatric cases.

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