CLINICAL CASES

Multiple sclerosis with psychotic impairment

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Abstract

Background: Although previously considered rare, nowadays there are a growing number of reports describing association of psychotic impairment and multiple sclerosis (MS). Still, this connection remains unclear. The etiology of psychosis in MS has also not been explained adequately.

Material and methods: The authors report a case of multiple sclerosis evolution with psychotic impairment in a 62-year old male. The patient, who had previously been diagnosed with acute disseminated encephalomyelitis, complained of acute delusional disorder during his rehabilitation course. Magnetic resonance tomography was carried out and revealed progression of the focci of demyelination in fronto-basal lobes, paraventricular and perviventricular regions. Mental condition of the patient improved after steroid therapy. The patient was followed up after a period of 2 weeks wherein, improvement in psychotic symptoms was reported.

Results: On the grounds of the clinical symptoms and magnetic resonance tomography findings a diagnosis of multiple sclerosis by Revised McDonald Criteria (2010) was made.

Conclusions: The present case report describes a psychotic impairment as an isolated clinical manifestation of the second onset of multiple sclerosis. The case demonstrates the importance in considering multiple sclerosis as a cause of acute or progressive severe cognitive impairment even with relative sparing of other neurological deficits. We suggest that the acute psychosis that has been described in the case is associated with the lesions in frontobasal and periventricular area of temporoparietal region and pericallosal area.

Key words: multiple sclerosis, psychotic impairment, demyelination.

Introduction

Multiple sclerosis (MS) is a chronic inflammatory disease of the central nervous system. The core pathological process of MS is affection of the myelin coating of the nervous fibers. According to Milo, 2010 [1] there are about 2.5 million people worldwide suffering of MS. This is the most common cause of neurologic disability in young and middle-aged adults. It affects women twice as common than men. The onset of the disease usually occurs between 20 and 50 years of age with a peak at about 30 years of age [2, 3].

Case presentation

A 62-year-old right-handed, married male was referred and admitted to the Department of Neurorehabilitation for a course of rehabilitation therapy. On admission, he was alert, without particularities on physical examination: temperature 36.8, pulse rate 74/minute regular, blood pressure 112/71 mm Hg, and respiratory rate 17/minute. His higher mental functions, including orientation, memory, judgement and abstract reasoning were normal. Mini mental status examination (MMSE) revealed a score of 26/30. The patient suffered of tetraparesis, flaccid in upper limbs and spastic in lower limbs. He also complained of urinary incontinence. Functional independence measure (FIM) revealed a score of 38 points. A blood test revealed elevated erythrocyte sedimentation rate (21 mm/hour) but was otherwise unremarkable. His medical history revealed that ninety-two days prior to the current presentation, acute tetraplegia, disphagia and disphasia developed on the background of upper respiratory tract infection. He, then, was admitted to an intensive care unit. Magnetic resonance imaging (MRI) of the brain and spinal cord revealed multiple focci of demyelinisation and gliosis. A diagnosis of acute disseminated encephalomyelitis (ADEM) was made as per ICD 10. The patient was treated with corticosteroid therapy (methylprednisolone). On the tenth day after the first admission an improvement was reported, plegia regressed to paresis as well as bulbar impairment was noticeably reduced. The patient was discharged on the fourteenth day.

After ninety-two days, in our Department the patient began a course of complex physiokinetotherapy and occupational therapy. In the first night after admission – the ninety-third day after the first admission – the patient woke up approximately at 1:15 a.m., he was agitated and aggressive till the morning. During the evaluation on the next day the patient did not recollect the events of the previous night. He was assigned to Clonazepame 0.5 mg per day. In the second night the patient complained of the lack of sleeping, irritability, anger outbursts. He was muttering and gesticulating to himself, he stressed his body was "possessed by dark forces", he violently scratched his body, he misrecognised his relative persons. An evaluation by the psychiatric service was requested. An acute delusional disorder was diagnosed. Clonazepame was replaced by Quetiapine at 50 mg/initiation dose with 50 mg/day dosage pace until a total dose of 200 mg per day was reached.

Taking into account psychotic disorder as possible relapse of demyelinating disease, further investigations were undertaken. MRI scan of the spinal cord (fig. 1) and brain

(fig. 2, 3) revealed progression of focci of demyelinisation in paraventricular areas, frontal, temporal and occipital lobes, cerebellum.

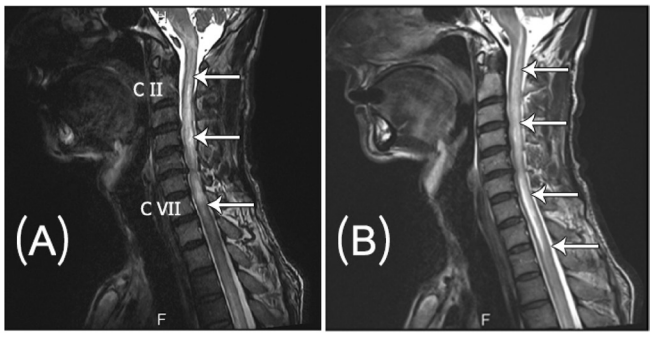

Fig. 1. MRI dorsal spine sagittal T2-weighted images. Imaging made at the first presentation (A) and ninety-five days after (B). On image A the cervicomedullary lesion appears hyperintense at the level of cervical vertebrae II to VII. On image B the lesion expands to cervical vertebra IX, showing dissemination in time and space.

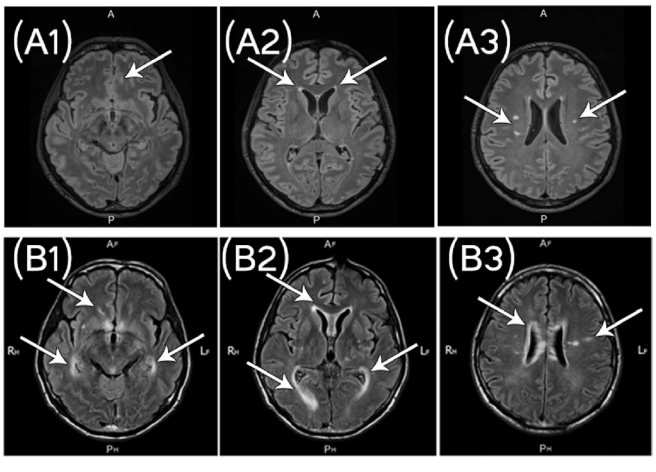

Fig. 2. MRI brain horizontal T2-weighted images. Imaging made at the first presentation (A series images) and ninety-five days after (B series images). On series A hyperintense lesions are depicted in frontal lobes (A1) and paraventricular regions (A2, A3). On series B the lesions' expanding is demonstrated in frontobasal lobes (B1), paraventricular and perviventricular regions (B3), occipital lobes (B2) and temporal lobes (B1).

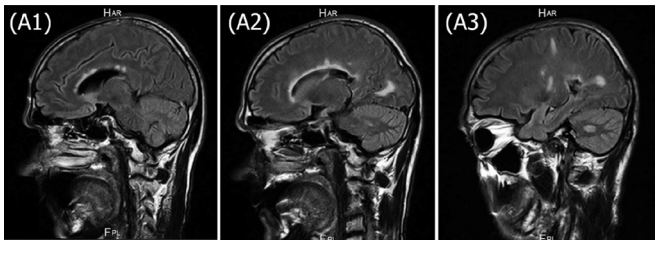

Fig. 3. MRI brain sagittal T2-weighted images. Imaging made ninety-five days after the first presentation. There are multiple hyperintense lesions in pericallosal area (A1, A2), occipital lobe (A2), temporal lobes (A3) and cerebellum (A3).

A diagnosis of multiple sclerosis, cerebro-spinal form, relapsing remitting pattern, EDSS 8.5 with tetraparesis, urinary incontinence and mental disorders was established. The patient was assigned to corticosteroid intravenous therapy.

Mental condition of the patient improved on the 3rd day after steroid therapy. Delusional psychotic component decreased, though the patient remained depressive and apatic. Minimental state examination showed 13 points' result. Neurological assessment on the discharge day (10th day after admission) revealed a slight improvement – FIM 45 points score. His antipsychotic medication was continued in a dose of quetiapine 150 mg per day. He was advised to attend cognitive rehabilitation. The patient was followed up after a period of 2 weeks wherein, improvement in psychotic symptoms was reported.

Discussion

The problem of psychiatric disorders associated with MS has not been adequately managed for a long time. Meanwhile, these disorders are very important in the formation of the clinical picture of the disease, and, sometimes they are the cause of diagnostic errors. Recent years, an increasing attention of researchers has been marked. Large-scale hospital-based, epidemiological and case studies have suggested a relationship between psychosis and MS through demonstrating their higher than chance co-occurrence, their temporal relationship, and their association with particular structural abnormalities in the brain. The characteristics of psychiatric disorders in MS may vary widely: from asthenic syndrome to severe dementia and psychotic state. The most of reports of co-occurrence of psychosis and MS is uncommon, mostly these are single case studies [4]. Mental impairment in MS was observed as often as in the general population, but a recent study reported rates of 2-3% compared with 0.5-1% in the general population [5]. These disorders develop independently of the degree and nature of neurological deficit. In some cases, mental disorders are the first and/or dominant symptom [6]. Currently, the factors that predict the development of cognitive impairment in an individual patient are not completely elucidated. They have a significant effect on the performance and effectiveness of the treatment, often exacerbating the disability, but not always taken into account by the specialists.

Short psychotic episodes may occur as manifestations as well as a remission-followed onset relapse in MS. The most severe, but rare mental disorder in MS is a polymorphic psychotic state. This condition may include a very wide range of psychopathological manifestations – from fragmentary perception to severe psychotic episode. Such patients are more likely to be misdiagnosed as suffering of schizophrenia. Psychosis in MS distinctly differs from schizophrenia as it has a later age at onset, quicker resolution, fewer relapses, better response to treatment and a better prognosis [7].

It is important to stress, that, in almost all cases, signs of organic lesions of the nervous system are present. The cause of diagnostic errors in such cases is the underestimation of neurological symptoms due to the prevalence of mental disorders, or insufficient tactics to detect these symptoms.

Patients with acute psychotic disorders in MS have a significantly larger area of periventricular lesions, visualized on MRI, mainly in temporoparietal region [8], especially around temporal horns. These findings were made in comparison with a group of MS patients with the same duration and severity of disease [7]. In a dynamic study (9 months long) of glucose metabolism, made by positron emission tomography and MRI, in a patient with acute behavioral disorders and MS, a progressive decrease of the metabolism in the frontal and temporal cortex bilaterally was observed, as well as in thalamus and hippocampus, on the background of the rapid increase of the demyelinating lesions. These results suggest that the basis for the development of mental disorders, perhaps is a violation of subcortical neuronal interactions (due to demyelination and subsequent deafferentation), which led to metabolism impairment of the above laying cortex [9]. The scarce database on psychosis in MS suggests an involvement of lesions in temporal areas [7, 10]. It may be related to a predominance of lesions in the temporal lobes [11, 12] and with larger lesions in general. In all cases, neurological symptoms preceded the onset of psychosis. The psychotic group also had a later age of onset of psychosis than psychotic patients without brain disease. In another study, flattened affect, delusions and thought disorder were associated with greater pathology in the temporoparietal region in a sample of 116 MS patients compared with a control group with physical disabilities [13].

Neuropsychological testing of patients with multiple sclerosis is a complex task due to the wide range of possible cognitive impairment. Large volume of testing often leads to rapid depletion of the patient. In addition, some neuropsychological tests, such as correction test, cannot be performed at a patient, suffering from MS, because of neurological deficits (visual impairment, tremor etc.) or mild dementia. The most commonly screening assessment, used for evaluation of these patients, is Mini Mental Status Examination (MMSE) [14] and Breaf Repeatable Battery of Neuropsychological Tests (BRB-N) [15]. BRB-N was designed specially for patients with MS, it considers the most common cognitive impairment associated with MS and the above mentioned difficulties in testing. Its implementation takes a total of 20 minutes and does not require specially trained psychologist. In the Republic of Moldova, similar tests for examination of the patients with MS have not been yet implemented.

Conclusion

Mental impairment may associate MS during the course of the disease or as a symptom of first onset. Despite the fact, that modern neuroimaging techniques offer a greater insight into prevalence and pathophysiology of many psychometric findings associated with MS, the pathogenesis of these disorders needs further research.

We suggest that the acute psychosis that has been described in the case is associated with the lesions in frontobasal and periventricular area of temporoparietal region and pericallosal area. This localization correlates with most of the reports, relating coincidence of psychotic disorders with MS.

In the case neurological impairment preceded the onset of psychotic one, which also corresponds to most of reports. Notwithstanding, the peculiarity of the presented case is that the relapse of the disease was manifested by an uncommon MS clinical presentation characterized by an isolated severe psychotic disorder in the relative absence of significant progression of neurological deficit (fig. 4).

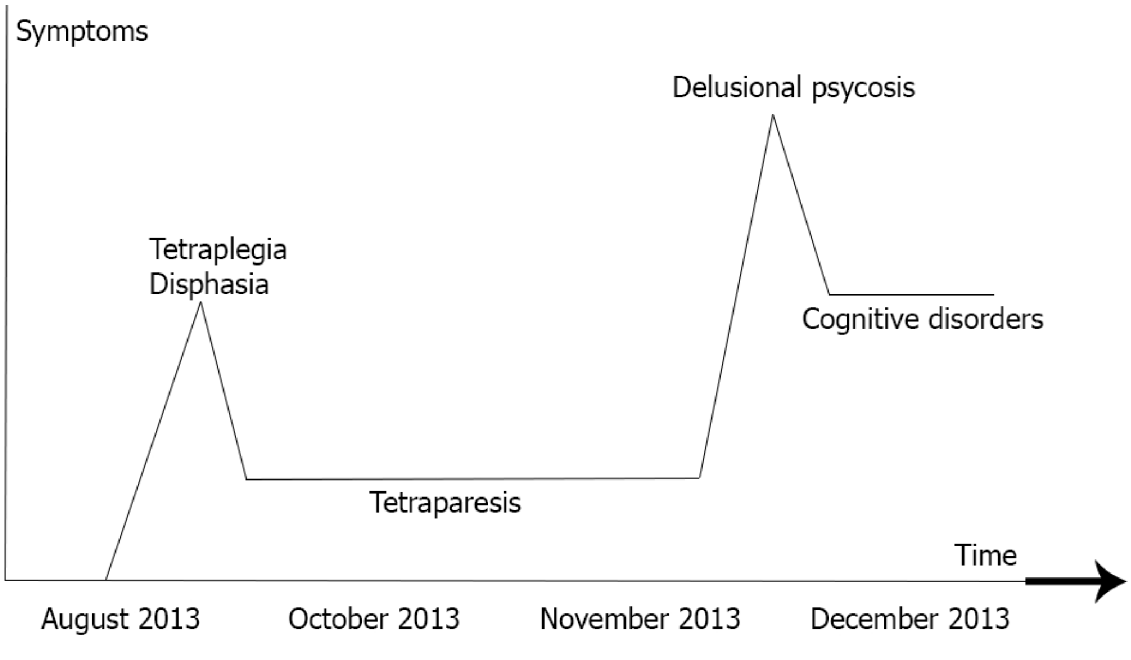

Fig. 4. Clinical evolution of the disease. At the first onset (day 1) the patient presented tetraplegia, bulbar disorders and urinary incontinence. After steroid therapy, clinical symptoms were reduced to tetraparesis and urinary incontinence (day 14). At the second onset (day 94) delusional psychosis was revealed. At **discharge (day 102), after steroid and neuroleptics therapy, the patient presented moderate cognitive disorder.**

Despite the overwhelming presence of neurological MS symptoms, close attention should be paid to the early diagnosis and sufficient treatment of the psychiatric aspects.

The case demonstrates the importance in considering MS as a cause of acute or progressive severe cognitive impairment even with relative sparing of other neurological deficits. General medical conditions should always be eliminated before diagnosing a primary psychiatric condition, especially in a patient with late-onset or atypical features, peripheral physical findings, a lack of response to standard treatments and cognitive changes. Considering the insufficient number of controlled trials and tested algorithms for the particular population of psychiatrically affected MS patients, the current treatment should be based on general psychiatric treatment guidelines.

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