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Depression, Consequence Or Comordity In Multiple Sclerosis: About A Case Report

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Abstract:
Multiple sclerosis (MS) is a chronic, disabling autoimmune neurological disease, most common in young adults. It is characterized by multiple demyelinating and axonal lesions throughout the central nervous system. To date, little is known about its causes, leaving many hypotheses open. Depression is most often associated with MS, accounting for 25-55% of cases depending on the series. Depressive symptoms are often of moderate intensity in this population category. Suicide rates are higher than in the general population. In this article, we present the clinical case of a young patient suffering from very advanced multiple sclerosis, evolving since the age of 11, hospitalized in psychiatry after a suicide attempt by defenestration. In the first part, we will present the case from two angles, neurological and psychiatric, with particular emphasis on the impact of the disease on the body and psychic experience. The second stage, which represents the main objective of this clinical illustration, is the discussion of the different hypotheses concerning the genesis of the depressive state in MS: is it a consequence of the disease or a comorbidity? Among other things, we'll look at the links between the depressive episode and stressful life events, defense mechanisms, the motor and cognitive handicap of multiple sclerosis, inflammation and iatrogenesis. These hypotheses won't answer all the questions, but they do provide food for thought that may be useful in the management of these suffering patients.
Key Word*:Multiple sclerosis, Depression, Complication, Consequence.*

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I. Introduction

Multiple sclerosis (MS) is a chronic, disabling autoimmune neurological disease, most common in young adults. First described in 1868 by Jean-Martin Charcot. It involves inflammation and selective, chronic demyelination of the white matter of the central nervous system [1]. This disseminated damage to the CNS can result in dysfunctions affecting two main dimensions: the neurological sphere, and the cognitive and emotional spheres. Impairment of each of these dimensions plays a role in the resulting disability and socio-familial restrictions secondary to MS [2]. The usual age of onset of MS is between 20 and 40, and there are 1.7 women affected for every 1 man. However, forms with very early onset in childhood and, conversely, very late onset have been described. To date, little is known about the causes, leaving room for a number of hypotheses, in this case genetic or environmental, more specifically infectious. In the case of individual patients, there is an average relapse every two years and a new lesion every two months on imaging [3]. The sex ratio varies according to the form, from two women to one man in the recurrent form to one in the progressive form [4]. Depression is the thymic disorder most often associated with MS, accounting for 25-55% of cases depending on the series [5]. This percentage is higher than that encountered in the general population, but also than that described in chronic pathologies in general [5]. Other studies consider that MS patients are more often depressed because of their disability. Patten, in his study (2003) [5], notes a lifetime risk of depression of 50%, with an annual prevalence of 20%. However, depression associated with MS has a probable multifactorial etiology. Depressive symptoms are often of moderate intensity in this population category. Suicide rates are higher than in the general population [6]. There are several arguments in favor of the onset of depressive disorders preceding neurological disorders, the existence of a relationship between depression and the course of the disease but not with the level of disability, and a correlation between affective disorders and certain data on the extent of lesions on brain imaging.

In this article, we present the clinical case of a young patient suffering from very advanced multiple sclerosis, evolving since the age of 11, hospitalized in psychiatry after a suicide attempt by defenestration. In the first part, we will present the case from two angles, neurological and psychiatric, with particular emphasis on the impact of the disease on the body and psychic experience. The second stage, which represents the main objective of this clinical illustration, is the discussion of different hypotheses concerning the genesis of the depressive state in MS: "Is it a psychological response to the handicap and uncertain prognosis of the disease

(comorbidity)? Or is it a consequence of the disease? These hypotheses won't answer all the questions, but they do provide food for thought that may be useful in the care of these suffering patients.

II. Patient And observation

Anamnesis:

Anamnesis enabled us to resituate certain life events at the onset of the disorders, one year before the first real attack of the young man named Yanis. He was 10 years old, from the first marriage of his parents, and has a twin brother. The parents divorced at that age. The young boy had not been able to bear his father's departure and had experienced it as an abandonment. His mother would tell us that it was a very difficult time for him. He began to have behavioral problems at school and at home. He became very aggressive with his mother and twin brother. Four months later, at the age of 11, the youngster complained of ocular pain in his left eye and paresthesia in his lower limbs. Investigations were carried out, and the diagnosis came back in favor of multiple sclerosis. The symptoms disappeared within 48 hours. He went back to school as normal, but ten months later, a second attack occurred following news of his mother's remarriage to another man he didn't know. He didn't want to talk to anyone or attend his mother's wedding, and isolated himself in his room, missing school. He told his mother she was going to abandon him too. In the end, he agreed to live with his mother's husband and his brother. His brother took good care of him and eventually accepted him. The young boy was cared for in a neurology department until the age of 17, i.e. for a period of seven years under immunosuppressive treatment and corticosteroid therapy during relapses. During this period of follow-up, Yanis experienced relapses and remissions every 6-8 months, signalling the appearance of a new lesion and a new symptom. Thereafter, management became anarchic, with problems of compliance and changes of doctor until the age of 23, in 2020, the Covid19 period. By this time, Yanis had suffered a very severe relapse following infection with Covid 19. The young man's condition deteriorated rapidly, with the onset of motor disability and other irreversible neurological symptoms. Since then, he has been under regular neurological care, with resumption of his 2ème line background treatment for multiple sclerosis.

The mother reports a change in her son's character, behavior and emotions, with fluctuating moods characterized by euphoria or crying. The mother adds that her son is incapable of feeling emotions towards his family, no matter what. As his illness progresses, he becomes apathetic, very temperamental, intolerant of frustration, refuses authority, very stubborn, listens only to himself and blackmails his parents into leaving the house or committing suicide. Regarding his disability, he refuses help and denies his physical incapacity. He walks for miles on crutches to the point of exhaustion.

His current psychiatric problems seem to have evolved over the past year, marked by a symptomatology that falls into the register of mood disorders in its depressive form. He was seen by a psychiatrist and antidepressants were prescribed, but to no avail as the patient refused to take them. The clinical picture worsened from day to day, culminating in a suicidal act involving defenestration. He was then referred to the psychiatric emergency department, where he was hospitalized. Yanis is currently 27 years old, single, with a secondary education, and has never trained or worked due to his illness and deteriorating somatic and psychological condition.

Neurological examination

Summary of neurological examination by neurologist with Expanded Disability Status Scale (EDSS)[7]:

Motor deficits and pyramidal damage

- the patient experiencing bilateral lower limb weakness after a few minutes of
- Pyramidal damage is responsible for tendon hyperreflexia
- Mild amyotrophy of the hands

Cerebellar and motor impairment

- Clinical examination reveals a pyramidal syndrome and cerebellar-spasmodic gait.
- Static impairment responsible for severe ataxia on walking and axial tremor on standing
- cerebellar dysarthria, characterized by a chanted voice

Sensory disorders

- Motor symptoms included paraparesis: very severe partial paralysis of the lower limbs, forcing him to use crutches.
- At sensory level: hypoesthesia: reduced sensitivity to touch. Localization is either spotty or Lhermitte's sign (electrical discharge felt in the spine when the cervical spine is flexed).

Brainstem damage and nystagmus

- Central unilateral positional nystagmus

- Dizziness
- No swallowing or olfactory disorders
- Cranial nerve damage is sometimes encountered. The VI (external ocular motor nerve) is the most affected, causing diplopia and limited abduction.

Sphincter disorders
- Vestibular syndrome and sphincter disorders: urinary urgency, sometimes incontinence. Sexual problems such as impotence.

EDSS: Disability is assessed using the Expanded Disability Status Scale (Fig.1) [7], which goes in steps from 0 to 10. Our patient had a high EDSS score of 6, corresponding to walking with the aid of crutches at the wheelchair limit.

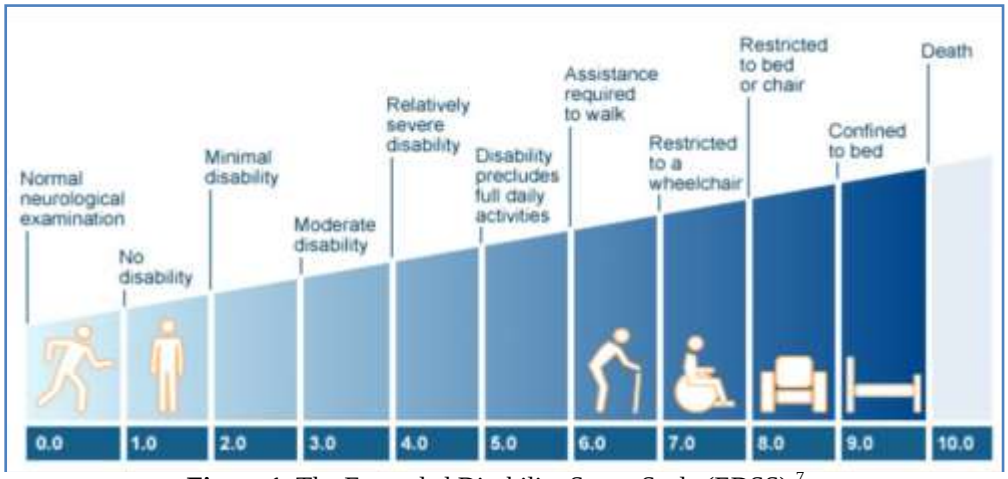

Figure 1: The Expanded Disability Status Scale (EDSS) [7].

The standard paraclinical examinations are cerebral MRI and lumbar puncture with an oligoclonal profile. The diagnosis has already been made.

Nuclear magnetic resonance imaging (MRI):

MRI is quite important for assessing the severity of lesions, which in most cases are related to the progression of disability. As a reminder, MRI is sensitive to the water content of the parenchyma, which makes it possible to highlight demyelinated, gliotic or edematous lesions in the form of hypersignals on T2-weighted sequences / FLAIR (*fluid attenuated inversion recovery)*. Some lesions, especially those that are highly demyelinated and destructive (axonal lesions) or simply very edematous, appear hyposignal on T1-weighted sequences. MRI can help in the diagnosis by showing the dissemination in time and space of inflammatory lesions of the CNS, provided that the information it provides is correctly interpreted. The criteria currently used by MRI to diagnose MS are the Barkhof criteria (Tab.1).

The diagnostic criteria are temporal dissemination (evolution in successive episodes), spatial dissemination (multiplicity of lesions in the central nervous system) and the inflammatory nature of the lesions.

The findings ofour patient's recent follow-up brain MRI(Fig. 2):multiple inflammatory-type demyelinating lesions of the supratentorial and subtentorial white matter of multiple sclerosis.

The diagnosis of the clinical form retained is that of relapsing-remitting multiple sclerosis, secondarily progressive with additional attacks evolving since the age of 11.

Table 1: Magnetic resonance imaging spatial dissemination criteria

Three of the following four Barkhof criteria must be met to establish spatial dissemination with MRI.
1 gadolinium-enhanced lesion or 9 T2 lesions at least 1 infratentorial lesion at least 1 juxtacortical lesion at least 3 periventricular lesions
Note: 1 spinal cord lesion can replace 1 brain lesion. Lesions visible on T2 must be at least 3 mm in diameter.

Psychiatric examination :

The mental examination with the young patient can be summarized as follows:

When we wanted to interview the young patient in the patient's bed, given his motor handicap, he refused, preferring to do it in the doctor's office, which became immediately irritable. We had to wait more than 20 minutes for him to arrive at the office, out of breath and tired, with significant functional impotence in both lower limbs, the ataxia was very obvious, as were the tremors. He had difficulty sitting up at our request. Undifferentiated biotype with unilateral nystagmus of the left eye. He had a haggard look, detached at times from the interview. We answered questions in a chanted voice. Initially, the patient was very reticent and anosognosic. We were unable to assess his mood, which was parasitized by moments of paradoxical euphoria that were out of context. His speech was very poor, limited to questions and answers. Once we had established his trust, we were able to establish a small doctor-patient relationship, which we felt was vital to guaranteeing the young patient's confidence and helping him to open up to discussion.

We noted a decline in intellectual faculties, with difficulties in tension and concentration. When asked about her neurological illness, she said: "It's not my MS, it's my mother's MS, tell her to stop searching the Internet". The interviews revealed a denial of the problems, and no mention of her illness. His denial of his problems and his desire to be "as before" mean that he doesn't want to admit his difficulties or feel his exhaustion.

When we talk about these projects, he'll say: "There's no project for me, no future".

When we mentioned the suicide attempt, he replied "it's my body, I can do what I want with it, it's nobody's business". During the interview, we noted a disturbance in his memory of recent events. Impaired judgment and information processing (he took a long time to understand and answer our questions). On the other hand, there was no evidence of delusional or hallucinatory activity. With regard to instinctual functions, Yanis eats very little, and at times refuses to eat for several days. He reports total insomnia, although he used to sleep for at least 6 hours. The patient also admits to having a problem with sexual desire and pleasure.

DSM-5 diagnostic criteria [8](Tab 2), confirms the diagnosis of a depressive episode despite the lack of existential symptoms:

- Asthenia,
- Impaired cognitive function
- Loss of interest
- Depressive ideations: self-deprecation, no plans for the future, or any future at all,
- Emotional control dysfunction
- Suicide attempts
- Instinctual function disorders: eating and sexual behaviour disorders. Complaints of insomnia are subjective and poorly appreciated by the patient. This function needs to be confirmed by somnographic recording and a healthy lifestyle before taking psychotropic drugs, which can cause drug reactions with MS medications.
- Assessment of the severity of clinical symptoms, using the Beck Depression Inventory (BDI) [9], reveals *moderate-to-moderate depression with* a score of 15/39.
- Assessment of cognition using the MMSE (Mini Mental State Examination) [10]. Cognitive dysfunction was judged to be moderately impaired, especially in immediate recall.

Neuropsychological tests: overall, these disorders affect attention, memory, reasoning, and concept handling, and abstraction, information processing speed, visuo-spatial functions and inter-hemispheric transfer. Memory disorders mainly affect storage, but also delayed recall.

The patient was admitted to a psychiatric ward following an attempt at autolysis by defenestration, which led to a diagnosis. Psychiatric management was based on antidepressant treatment of the serotonin reuptake inhibitor family. Unsystematized psychotherapy to support and guide the patient and his family. The psychotherapist will have to gradually bring the patient to an awareness of the reality of the facts. Psychotherapy offers the patient ways of coping with the disease, adapting to a new life and a new self-image. With regard to systematized psychotherapy, psychoeducation was indicated, in view of the patient's non-compliance with treatment and even discontinuation of therapy. A cognitive remediation program was also indicated for the re-education of cognitive functions.

Table 1: dsm-5 diagnostic criteria for depression [8]

The diagnostic criteria
The DSM-5 outlines the following criterion to make a diagnosis of depression. The individual must be experiencing five or more symptoms during the same 2-week period and at least one of the symptoms should be either (1) depressed mood or (2) loss of interest or pleasure.

1.Depressed mood most of the day, nearly every day.
2.Markedly diminished interest or pleasure in all, or almost all, activities most of the day, nearly every day.
3.Significant weight loss when not dieting or weight gain, or decrease or increase in appetite nearly every day.
4.A slowing down of thought and a reduction of physical movement (observable by others, not merely subjective feelings of restlessness or being slowed down).
5.Fatigue or loss of energy nearly every day.
6.Feelings of worthlessness or excessive or inappropriate guilt nearly every day.
7.Diminished ability to think or concentrate, or indecisiveness, nearly every day.
8.Recurrent thoughts of death, recurrent suicidal ideation without a specific plan, or a suicide attempt or a specific plan for committing suicide.

To receive a diagnosis of depression, these symptoms must cause the individual clinically significant distress or impairment in social, occupational, or other important areas of functioning. The symptoms must also not be a result of substance abuse or another medical condition.

However, the hypothesis of imputation to a general medical condition is not ruled out.

III. Discussion

In this discussion chapter, we will analyse the clinical case on the basis of the causal link between depression and multiple sclerosis, raising questions and hypotheses where possible.

Hypothesis of depression linked to the degree of disability

Our patient presents a fairly serious degree of disability in terms of sensitivity and motor skills, which limits his mobility and well-being, probably triggering in him the desire to end his life and die with dignity. Indeed, young Yanis is aware of the rapid deterioration of his physical and mental state, adding to this a pathological personality profile using defense mechanisms in the order of denial and non-acceptance of the illness, which is a source of chronic stress. In addition, most of the results in the literature point to factors with a poor prognosis: a high lesion load at the first attack, two or more attacks during the first year (MRI), transformation into a secondarily progressive phase or primary progressive forms, a strong accumulation of lesion load during the first 5 years of evolution [11]. Increased lesion load after 5 years [11]. EDSS score at 10 years is greater than 3. These criteria seem to have been adapted to our patient's evolution, since he had a significant lesion load at the onset of the disorders, which greatly increased in number and disseminated within the white matter and surrounding structures. Our patient had two relapses during the first year, which evolved over the years into a form of relapsing-remitting multiple sclerosis, secondarily progressive with additional relapses according to the classification of Lublin and Reingold 24 [12], and an EDSS score greater than 6 in 17 years of evolution.

The patient becomes dependent on the constant presence of a third party, given his fairly significant motor handicap, between a phases of transition from the use of crutches to a wheelchair. We are therefore faced with a fairly serious form of the disease, based on a serious lesion assessment in terms of somatic and psychological disability, confirmed by the numerous cerebral lesions on MRI.

More specifically, according to studies, the rate of depression is higher in young patients with a high EDSS score [13]. These findings are consistent with our clinical case, since our patient had a very early onset of the disease (age 11), which progressively worsened with a parallel deterioration in the EDSS score. In addition, the rate of onset of depression seems to be correlated with cognitive impairment [13], which was the case in our presentation, as the cognitive impairment was significant, suggesting confusion between the consequence of the pathology or of comorbid depressive disorders. It should be noted that Bamer [13], in a study of 1268 MS patients, found more depressive states at the onset of the disease in young, solitary patients with a low level of education, which was not the case with our patient. In fact, he was pre-pubertal, socially integrated, dependent on his mother, without motor handicap and unaware of the progressive risks of the disease. However, the patient's histrionic character disorder was at the forefront, with a search for emotional quests. Awareness of the pathology came later, as the disease progressed. It should be noted that the results of most studies are contradictory concerning the direct involvement of disability in the genesis of depression. Some, like Bamer, find an effect, while others exclude this link in the genesis of the depressive state. This severe form of the disease, with its disabling complications, offers every opportunity for emotional decompensation and, more frequently, depression.

As the percentage of MS patients suffering from depression is higher than that of patients with other pathologies, the question of an organic etiology for this condition arises. In their studies, Shiffer and Babigian [14]

found that 17% of MS patients consulted a psychiatrist before diagnosis. Garland and Zis [15] distinguish two types of depressive state in these patients: a chronic form linked to the social disorders correlated with MS, and the major depressive state that would apply to a relapse. Although depression and MS have often been studied, there are no data on the impact of mood disorders on involvement in care and the progression of the disease.

Another emotional disorder that interferes with depression is the presence of euphoria. Indeed, in chronic, long-standing forms of the disease, such as in our patient's case (more than 16 years of evolution), it is common to observe a paradoxical, morbid euphoria, sometimes associated with a decline in intellectual faculties, known as Euphoria sclerotica [16]. Studies in the literature report that throughout the course of MS, anxious and depressive manifestations are frequent, often hysteriform in appearance, and correlated with the degree of disability caused by the disease [16], which is consistent with our clinical case. Other disorders include pathological laughter or crying, a very frequent condition in multiple sclerosis.

Numerous studies have shown that cognitive disorders are frequent, affecting between 40% and 70% of cases, depending on the study [17]. These disorders affect attention, memory, reasoning, concept handling, and abstraction, information processing speed, visuospatial functions and interhemispheric transfer. Memory disorders mainly affect storage, but also delayed recall. There is considerable inter-individual variability in the type and severity of cognitive impairment. According to studies, around 10% of patients present a true picture of dementia affecting several cognitive domains, whereas the majority present only partial cognitive deficits predominating in one or other domain [18]. Cognitive disorders are more frequent in the advanced stages of the disease, as is the case with our patient. However, some studies have shown that they can occur at very early stages. Indeed, Amato et al [19] evaluated 50 patients, on average 1.5 years after the onset of their MS, and compared them with healthy subjects using a battery of neuropsychological tests.

Despite the early stage of the disease, the patients showed deficits in verbal memory and abstract reasoning. These authors re-tested these subjects four years later, showing a progression of cognitive disorders that was, however, independent of the progression of motor disorders, although the extent of the cognitive deficit would be a predictive factor of physical disability [19]. A few studies have been devoted to progressive forms of MS, but without distinguishing between the different progressive forms, making analysis difficult. The European Magnims study [20] studied a population of patients with primary or transitional progressive MS. Significant cognitive impairment, defined as below-normal scores on three tests - attention, concentration and reasoning - was observed in 30% of patients. A moderate but significant correlation has been established in various studies with certain morphological variables measured on MRI, lesion load, callosal atrophy and brain volume. The involvement of more diffuse cerebral damage in the form of axonal loss, a source of disconnection in the genesis of these disorders, has been suggested. We can see that the in-depth analysis of cognitive disorders affirms a probable link with MS lesions, rather than a depressive impairment, but this hypothesis has not yet been validated. To sum up, our patient's current episode is dominated by an apparently depressive picture induced by the motor handicap and the denial of the disease (comorbidity), but given the extent of the damage caused by MS and damaging to the patient, we would ask ourselves the question: "Is this depressive reaction not a symptom completing the clinical picture of MS (consequence)"?

Hypotheses on the existential links between event stressors, depression and multiple sclerosis

Certain factors are conducive to the onset of depressive disorders.

Parental or caregiver behavior:

Indeed, the way MS is portrayed in the minds of those close to the patient reflects a negative experience of the risk of severe paralysis and death. Others see these patients as malingerers: "he's got a wheelchair when he can walk!", "complaining about being tired when he doesn't look sick". Our patient falls into the first category, since his mother was obsessed with internet research into possible complications of the disease, even after her son's clinical picture had become complicated, effectively fearing dysautonomia, paralysis and death.

Periods of MSattacks:

A relapse can occur at any time, creating a permanent experience of uncertainty and consequent anxiety. Certain symptoms are common to both MS and depression, such as asthenia, anxiety and impaired cognitive function. Feinstein's study [21] found 45 subsyndromal pictures in a population of 100 MS patients. On the Beck scale, these patients showed irritability, disabling mood sadness and dysfunctional emotional control. These symptoms do not, however, lead to a diagnosis of depression according to the DSM-5 [22]. Indeed, despite meeting most of the dsm-5 diagnostic criteria for a depressive episode, as in our patient's case, the majority of symptoms are shared with those of multiple sclerosis. Indeed, this finding has been reported in most of the conclusions of literature studies on the subject.

Suicide attempts

According to Sadovnik [6], MS patients are 7.5 times more likely to attempt suicide than the general population. According to Stenager [23], suicidal ideation is most prevalent during the first five years of the disease's course, which may correspond to a period of acceptance of the disease. In our patient, on the other hand, the problem of acceptance of the disease is non-existent, given the very young age of onset of the disease (11 years), which is an age very rarely found in the literature. Our patient began to blackmail others into committing suicide only after the progressive onset of complications of the disease, which became a secondarily progressive renitrant form with disabling sequelae with serious consequences. Our patient seems to have more difficulty fighting the rapid deterioration of his physical health. However, he doesn't give up crutches for a wheelchair. And this behavior reveals the defense mechanism, which is the denial of the disorder allowing our patient to survive with dignity in their view. The wheelchair could sometimes have the value of a counter-phobic object, or just mark the end of life.

Defense mechanisms

Current reactions, after some fifteen years of disease progression, are different. Patients with a history of stressful events are:

On the one hand, in 50% of cases, the pathology is denied. People with MS don't talk about their disease. It's as if it didn't exist. Several theories have been put forward. Indeed, Freud's theory is very interesting. It may be a psychological defense mechanism according to Freud's conception, such as cancellation, cleavage or denial, which only knowledge of personality structure can decipher. In all cases, the result is non-acceptance of the disease (53.6% in some studies) [24]. On the other hand, the evolution is more marked by anger than by passivity, indifference or "not wanting to know". Awareness is growing, but not necessarily towards acceptance. It's as if the existence of previous events of loss prevented the psychic acceptance of the illness. And yet, the disease is also reflected in another loss: the loss of autonomy and an intact self-image, replaced by disability and a deteriorated self-image. MS remains a dreaded disease, which in more than half of all cases the sufferer does not accept, does not internalize, and is therefore unable to fight the disease effectively.

In other words, this reshuffling of defense mechanisms prevents acceptance of the illness, at the risk of an unexpected psychological collapse for the patient. According to the Freudian explanation, patients use a wide variety of defense mechanisms that stiffen the process of accepting their illness. They do, however, represent a struggle against loss, a source of painful depression. In fact, during our interviews with patients, we noted a denial of their disorders, with the performance of certain tasks. He does not adapt his task to his handicap. For example, he refuses to be interviewed in bed, despite his walking difficulties, preferring to move around alone with his disguises and ataxia. He confides that these journeys are particularly painful for him, and that he often feels unwell. His denial of his problems and his desire to be "as before mean that he does not want to admit his difficulties or feel his exhaustion. This investment is a struggle against depression, a malaise and a sign of suffering. However, it may also be a kind of defense mechanism, akin to avoidance of disability awareness or sublimation.

Another theory is that of the mourning/loss problem. The loss of a loved one is, in effect, the loss of a beloved, idealized object, as in our patient's case; the departure of his father for good following the divorce was experienced by the patient as a loss of object. Freud [25] likens this process to that of depression, since it also involves the collapse of the ego, according to Freudian theory. Mourning involves the activation of defense mechanisms.

During mourning, internal and external objects are experienced as lost and unsatisfactory, since they have abandoned the subject. The stages of mourning are initially marked by the loss of a cherished object. The patient experiences a sadness of mood similar to that seen in depression. In the second stage, a replacement internal object is created. Mourning is over when the person is able to reinvest in new external objects. Sometimes, mourning stops at the depressive position - this is pathological mourning. In this case, anguish and sadness are still present, which is consistent with our clinical case. These and other theories, though different, have one thing in common: they describe a phase of psychic disorganization following a loss.

Also, when the stress factor is significant in the year preceding the onset of the disorder, as is the case with our patient, these individuals are most often solitary, in isolation. This behavior is likely to have an impact on the course of the illness and its acceptance, psychologically accentuating the experience of loss and/or lack, of inner insecurity, which is exactly what our patient experienced. Indeed, bearing in mind that the onset of disorders coincided with the first episode of MS and infection with Covid 19.

IV. Inflammation

On the other hand, a great deal of work is currently being done on stress and inflammation. There are some interesting but unproven hypotheses. One hypothesis is that stressful life events activate the sympathetic

system and the hypothalamo-hypophyseal axis, responsible for hypercotisolaemia. In high doses, it has an anti-inflammatory effect by activating inflammatory factors such as interleukin (IL) 1, IL 10 and lipocortin 1 [26].

Some authors hypothesize that chronic stress, which causes hypercotisolaemia, leads to glucorticoid resistance, resulting in a chronic inflammatory process [27]. However, this hypothesis remains unproven. Autoimmune diseases affect around 5% of the population [27]. Their definition is an activation of the individual's immune system against its own cells and antigens. If the autoantigens that trigger an immune reaction are found in a single organ, that organ alone will be affected. If they affect several organs, the disease will be systemic. What these diseases have in common is a genetic predisposition and a reaction to environmental factors, as in the case of MS, which is an autoimmune pathology that can be influenced by stress [28-29].

In fact, this etiopathogenic hypothesis of the involvement of stress in the increase in inflammatory factors at the origin of MS has also been put forward in mood disorders such as depression, and even in suicidal behaviour. So, here again, we can't be sure about the origin of depression: is it a consequence of MS or a comorbidity? This stress-inflammation hypothesis remains open, as it is shared between MS and depression, and research studies are still underway to elucidate this question.

Iatrogenicity

Certain MS treatments, such as immunosuppressants, can induce sometimes severe depressive states, probably in predisposed personalities. In our patient, this hypothesis cannot be incriminated in the genesis of the depression, as he had been off treatment for several years, and especially during this period, the patient had experienced an anxiety-depressive episode. On the other hand, this hypothesis cannot be ruled out in this current episode of depression, as our patient had been receiving high-dose immunosuppressive drugs for the last three years, in view of the rapid deterioration of his MS. Was the depression iatrogenic, due to the high cumulative doses of immunosuppressive drugs? Or was it a consequence of the altered brain structures involved in MS emotions? Or was it due to the handicap generated by the degradation of motor and sensory functions? Here again, further research studies are underway to elucidate the causal links.

On a practical level, the question will be studied in its entirety on a case-by-case basis, and the therapist will have to take into consideration the person as a whole, feelings, changes in personality structure, significant dosages of immunosuppressants and the EDSS score. Thus, antidepressant treatment is not contraindicated, as are serotonin reuptake inhibitors, but if MS is resistant to this treatment and worsens, discontinuation of MS treatment should be considered, and its replacement by another long-term treatment recommended.

In short, in this clinical case, we can see that MS represents a loss at various levels: the life trajectory is altered, the self-image is altered by the disability and narcissism. The subject's identity is called into question. However, some patients refuse to mourn, and struggle with inadequate defense mechanisms against depression and resignation, as was the case with our patient. Most hypotheses remain unresolved.

Recent brain MRI of the patient named Yanis:

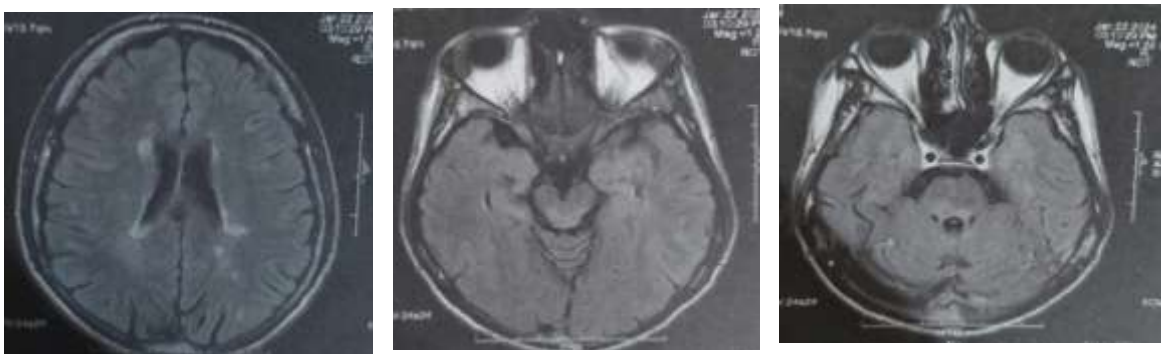

Figure 2: Multiple hyperintense T2 and Flair nodular lesions scattered throughout the white matter structure:

- *Subtentorial: posteromedian bulbar; bilateral central and posterior protuberances, posterior part of the midbrain, bilateral cerebellar ;*
- *Sus-tentorial: deep semi-oval and juxtacortical centers, predominantly periventricular in particular, opposite the semi-occipital horns of the lateral ventricles, associated with lesions of the corpus callosum in particular, at the level of his right lateral knee.*

Conflict of Interest

The authors declare no conflicts of interest.

Authors' Contributions

All authors contributed to the completion of this work and have read and approved the final version of the manuscript.

V. Conclusion

This case study illustrates the importance of the psychiatrist's role in liaison psychiatry for patients suffering from various organic pathologies. His role is to understand the general mechanisms of certain somatic pathologies, in particular autoimmune disorders, which may be psychologically decompensated or take on the mask of psychiatric disorders, or even a comorbidity complicating a chronic illness. This category of patients fights depression with projective defense mechanisms. These mechanisms are initially adapted, but if they are maintained, they can lead to difficulties in adapting to the illness, which in turn can lead to psychological collapse. Psychiatrists need to work in a multi-disciplinary environment, and have a role to play in therapeutic education and psychotherapy, helping patients to come to terms with their pathology, while respecting their right to listen.

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