Multiple sclerosis in Algeria, a multidisciplinary management at Bejaia University Hospital Center.

F. Bouali[a], S. Khellaf[a], N. Saaoui[a], H. Meziani[a], D. Si Ahmed[b]

[a] *boualifaycal@hotmail.fr* and *saddek.khellaf@gmail.com*
[a] *Internal Medicine Department, Bejaia University Hospital Center, Bejaia 06000, Algeria*
[b] *Internal medicine Department, Mustapha Pacha University Hospital Center, Algiers 16000, Algeria*

Abstract

The aim of our study is to establish the clinical, para-clinical, therapeutic and progressive profile of Multiple sclerosis (MS) in the Algerian region of Bejaia. We performed a retrospective descriptive study for a period of 4 years, going from January 2015 to December 2018. Diagnosis of MS was retained according to the 2010 McDonald criteria. Epidemiological characteristics were studied, such as first clinical presentation, clinical form, biological and neuroradiological data, current therapeutic management as well as evolutionary profile by evaluation of the Expanded Disability Status Scale (EDSS). We collected 109 Patient with MS, including 71 (65%) women and 38 (35%) men with a Sex Ratio F / M of 1.86. Average age of patients was 38.7 years with extremes between 17 and 65 years. Average age of onset was 31 years (ranging from 11 to 53 years). MS diagnostic delay was 2.9 years. The most frequent MS form was the relapsing remitting (80%), then the secondary progressive (12%) and finally the primary progressive form in 8% of cases. Patients received relapses corticosteroid treatment in 73% of cases. Disease modifying therapies (DMT) was prescribed based on interferon beta in 83 patients, Natalizumab in 2 patients and cyclophosphamide in 22 patients. We observed that EDSS increased from less than 5 in all patients at onset to more than 5 in 11% of patients after an average period of 6.7 years. Despite the small sample of our population, the severe aspect of North African MS could be clearly seen in our study.

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Introduction

Multiple sclerosis (MS) is a chronic inflammatory demyelinating and degenerative disease of central nervous system (CNS), resulting sometimes by severe handicap in young people [1]. Signs and disease symptoms can occur individually or in combination, thus in an acute or progressive mode. The two useful elements in practice are the onset mode (by relapses or progressing) and the present disability status. This will distinguish 3 different forms, the relapsing remitting (RR) form and the progressive forms. These progressive forms occur either immediately at the beginning of the disease, then called primary progressive MS (PP), or following the development of a RR form, these are secondary progressive MS (SP) [2-4].

Diagnosis of MS, defined by Poser [5] then McDonald [6], is based on some criteria of spatial and temporal dissemination of the lesions. These criteria have been revised several times, the last one in 2017 [7]. Predilection exam remains MRI [8-10], whether or not supplemented by a lab prove of intrathecal secretion of immunoglobulins [11]. Pathophysiologic mechanisms of MS remain poorly understood, but it is generally accepted that it develops in subjects with individual genetic susceptibility who are subsequently confronted with various environmental factors [12-14]. This initiates an immune reaction [1, 15] directed against the CNS at the origin of MS various symptoms [16].

Prevalence of multiple sclerosis in the world is variable and corresponds to a north-south gradient in each hemisphere [17, 18], epidemiological data find prevalence around 20/100 000 in Central and Latin America, 60 in Australia, 150 and 205 cases in northern European countries, or even up to 357 cases in Canada. The prevalence seems to be very low in Japan (13/100 000) and in China [19-21]. Worldwide incidence of the disease has increased over the 50 past years [22], this increase seems to be faster in women than in men [23-25]. Prevalence and incidence of MS are not well documented in many North African and Middle Eastern (MENA) countries including Algeria, and most prevalence estimates come from isolated hospital studies [26].

In Algeria, the reported prevalence, from studies carried out in Tlemcen [27] then in Blida [28], is estimated respectively at 23.7 and 39.7 cases per 100,000 inhabitants. As for Bejaia, no study has been carried out on MS, so we deemed it appropriate to study the clinical, para-clinical, therapeutic and progressive profile of this disease in the region.

Research elaborations

This is a descriptive retrospective study, which took place in the department of internal medicine at the Khelil Amrane university hospital center in Bejaia, in eastern Algeria. The study was carried out over a period of 4 years, from January 2015 to December 2018. Diagnosis of MS was retained according to the 2010 McDonald criteria. Epidemiological characteristics were studied, such as first clinical presentation, clinical form, biological and neuroradiological data, current therapeutic management as well as follow-up profile by assessing the Expanded Disability Status Scale (EDSS). Statistical analysis was performed using IBM Statistical Package for Social Sciences (SPSS) version 20.0 (Chicago, IL, USA).

Results

As shown in Table 1, we collected 109 PwMS, including 71 (65%) women and 38 (35%) men with a F/M Sex Ratio of 1.86. Average age of patients was 38.7 years with extremes between 17 and 65 years. Average age of onset ranging from 11 to 53 years was 31 years. Most frequent first symptoms were motor deficit (in 45 cases) and reduced visual acuity (in 22 cases). Brain magnetic resonance imaging (MRI) scan was performed in all patients and found demyelinating lesions in characteristic MS areas as the following proportions; periventricular region in 74 (67.9%), juxtacortical region in 90 (82.6%), posterior fossa in 54 (49.4%) and spinal cord in 40 (36.7%) patients. Lumbar puncture (PL) was performed in 79% of patients and immunological study of the cerebrospinal fluid (CSF) showed intra thecal immunoglobulin synthesis in 66 (76%) cases. Average diagnostic delay was 2.9 years. The most frequent MS form was the relapsing remitting (80%), then the secondary progressive (12%) and finally the primary progressive form in 8% of cases. We observed that initial EDSS results were already higher than 3.5 in 17% of our patients. After an average evolution period of 6.7 years, this score increased from less than 5 in all patients to more than 5 in 11% of patients. Patients received relapses treatment with corticosteroids in 73% of cases. Disease modifying

therapies (DMT) was prescribed based on beta interferon in 83 (76.1%) patients, Natalizumab in 2 patients and cyclophosphamide in 22 (20.1%) patients.

Table 1. Characteristics of the study population.

	N (%)
Average age (years) *	38.7 [17 - 65]
Women	71 (65%)
Men	38 (35%)
Sex-Ratio F / M	1.86
Average age of onset	31 [11 - 53]
Initial clinical presentation	
Motor deficit	45 (49%)
Decreased visual acuity	22 (24%)
Sensitive disorders	19 (21%)
Gait disorders	9 (10%)
Average diagnostic times (year)	2.9
Clinical form:	
Relapsing Remitting	88 (80%)
Secondary Progressive	13 (12%)
Primary progressive	8 (8%)
Brain MRI scan	109 (100%)
Lumbar puncture	86 (79%)
Intrathecal IgG synthesis	66 (71%)
Initial EDSS:	
0 to 1.5	71 (65%)
2 to 3.5	20 (18%)
4 to 5.5	18 (17%)
6 to 6.5	0
7 and more	0
Average duration of evolution (years) *	6.7
Current EDSS:	
0 to 1.5	64 (59%)
2 to 3.5	17 (16%)
4 to 5.5	15 (14%)
6 to 6.5	11 (10%)
7 and more	1 (1%)
Total	109 (100%)

Conclusion

In most of autoimmune diseases, women are affected more frequently than men [29]. Similar to the results of our study, several demographic studies have shown that the female prevalence in multiple sclerosis (MS) is almost constant [30]. This preponderance is further increased in early and late cases, in family cases as well as in twin pairs of MS [31]. This predominance could be attributed to environmental (vitamin D), hormonal, sexual or even genetic factors [30, 32].

The age of onset of MS can vary from childhood to adulthood. In our study, it was 31 years old. Several studies [33-36] concerning the role of this age of onset in the later course of the disease, have reported that a higher age at onset is associated with a less favorable prognosis. However, other studies have not confirmed this result [37, 38]. Our PwMS present a wide variety of neurological symptoms, being linked to the fact that inflammatory manifestations can involve different structures of the CNS [35, 39].

Despite the small sample of our study, the severe aspect of North African MS could be seen. We found out that 11% of our patients lost their walking autonomy after an average evolution period of 6.7 years. this observation is added to many other studies results, like the multicenter study performed by Hechem et al., and report that MS in Algeria would have a severe course with a rapid disability onset [40]. Similar results have been observed in Morocco [41] as well as in studies carried out in Europe also on North African migrants [42].

MS in North Africa remains a particular severe form requiring broader genetic and environmental studies and well-coordinated multidisciplinary management to allow not only an accurate and early diagnosis but above all a less disabling course under a well targeted treatment.

Conflicts of interest

Authors of this manuscript do not declare any conflict of interest.

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