Multiple Sclerosis in Central American and Spanish Caribbean Region: Should it be Recognized as a Public Health Problem?

Fernando Gracia1,2*, Blas Armien1,2, Victor Rivera3, Collaborative Multiple Sclerosis Group of Central America and Spanish Caribbean Region (CMG): Antonio VV Rodriguez4, Priscilla Monterrey5, Ricardo Rincon5, Dennis Chinchilla5, Alexander Paraje5, Luis Rosales5, Johanna Vásquez5, Ricardo Sánchez5, Amado Díaz De La Pe5, Daynet Grass6, Reinier Cardentey6, José A. Cabrera6, Deyanira Ramirez7, Blanca Hernández7, Raül Comme5, José Cabrera5, Pedro Roa5, Awilda Candelario5, Ernesto Cornejo5, Jaime Delgado5, Alejandro Diaz5, Jenner Velázquez5, Nelson Chinchilla4, Enunice Ramírez4, Vanessa Sirias4, Jorge Martínez4, Walter Diaz4, Luis García4, Octavio Duarte4, Fernando Gracia3, Blas Armien1,2, Alba Vásquez2, Claudia Domínguez2, Ángel Chinea2, Victor Rivera4

1Health Science Faculty, Universidad Interamericana de Panama, Panama City, Panama
2Neurology Service, Hospital Santo Tomas, Panama City, Panama
3Department of Research in Emerging and Zoonotic Diseases, Gorgas Memorial Institute of Health Studies, Panama City, Panama
4Maxine Mesinger Multiple Sclerosis Clinic, Baylor College of Medicine, Houston City, Texas, USA
5Collaborative Multiple Sclerosis Group of Central America and Spanish Caribbean Region, Costa Rica
6Collaborative Multiple Sclerosis Group of Central America and Spanish Caribbean Region, Cuba
7Collaborative Multiple Sclerosis Group of Central America and Spanish Caribbean Region, Dominican Republic
8Collaborative Multiple Sclerosis Group of Central America and Spanish Caribbean Region, El Salvador
9Collaborative Multiple Sclerosis Group of Central America and Spanish Caribbean Region, Guatemala
10Collaborative Multiple Sclerosis Group of Central America and Spanish Caribbean Region, Honduras
11Collaborative Multiple Sclerosis Group of Central America and Spanish Caribbean Region, Nicaragua
12Collaborative Multiple Sclerosis Group of Central America and Spanish Caribbean Region, Panama
13Collaborative Multiple Sclerosis Group of Central America and Spanish Caribbean Region, Puerto Rico
14Collaborative Multiple Sclerosis Group of Central America and Spanish Caribbean Region, USA

Abstract

Background: A collaborative effort seeking to provide regional information on the status of Multiple Sclerosis (MS) and its recognition as a public health problem.

Methods: Certified neurologists from the collaborative group retrospectively provided information on the number of MS cases by country diagnosed until 2016 per the McDonald 2010 criteria to estimate crude prevalence. In addition, some countries provided information related to gender, median time to diagnosis, clinical type, Expanded Disability Status Scale (EDSS) and treatment. Cases (n = 1,092) were collected between May 1 to October 24, 2016. Confidentiality of information was guaranteed.

Results: The estimated crude prevalence of MS in this region was 10.1 × 10^5 inhabitants. Data from this series indicated a female:male ratio of 3:1; median time from onset to diagnosis < 1 year (0–4 years); 90% of cases had a relapsing remitting multiple sclerosis (RRMS) type. EDSS was between 0–3 in 57% of the cases and 94% of patients with RRMS were receiving treatment. The proportion of neurologists in the region is less than 1 × 10^5 inhabitants with an adult/child neurologist’s ratio of 5:1.

Conclusions: Although under-reporting of cases may be present in this study, we conclude that MS in the region is a health concern that potentially could result in substantial morbidity and permanent disability (EDSS > 6; 84.7%). We present evidence to generate new health policies in the region.

Keywords: Multiple sclerosis; Prevalence; Central America; Spanish Caribbean Region; Public health

Multiple sclerosis is a multifocal demyelinating disease with progressive neurodegeneration caused by an autoimmune response [1]. The prevalence of MS in North America and Europe is approximately 100–250 × 10^5 inhabitants [2] in Latin American oscillate between 1-22 × 10^5 [3]. The epidemiology information of MS in Central American and Spanish Caribbean Region is scarce [4,5]. This collaborative effort aims to provide regional information on the status of multiple sclerosis in this region and recognition as public health problem. Certified neurologists (n = 33) from the collaborative group retrospectively provided information on the number of MS cases by country, utilizing the McDonald 2010 criteria [6]. In addition, some countries provided information related to gender, median time from onset to diagnosis (years), clinical type, EDSS and treatment. This series of cases (n = 1092) were collected between May 1, 2016 to October 24, 2016. Likewise, quality controls were applied to avoid duplication. The confidentiality of the information was guaranteed. The Epi Info™, version 7.2 [7], was used to statistical analysis to estimated proportions, mean age at disease onset, standard deviation, median time from onset to diagnosis and crude prevalence (Table 1).

The estimated crude prevalence of MS for the region was 10.1 × 10^5 and varied between 0.9 to 7.7 × 10^5 inhabitants. Nicaragua had the lowest prevalence while Puerto Rico had the highest. In this series, the female: male ratio was 3:1. The median time from onset to diagnosis < 1 year (0–4 years), while 90% had a relapsing remitting type (RRMS), 57% of the patients had an EDSS between 0–3, and 94% of RRMS were on treatment. The proportion of neurologists in the region is less than 1 × 10^5 inhabitants with adult/child neurologists ratio of 5:1 (Table 1).

The data from this report show that prevalence in most of these countries fluctuates between very low and low with exception of Puerto Rico who has a moderate prevalence. Reasons adjudicated for Puerto Rico’s higher prevalence in the region include the contribution of a national MS registry, unique in the Americas and enforced by local law. In addition, Puerto Rico has a different genetic population make up from the rest of Latin America (higher concentration of white Caucasian groups). Analysis of the origin of its population should eventually be considered. In our series, women are the most affected. Also age of onset and the proportion of clinical type of MS is similar to that described in others studies [3]. Time of diagnosis, were made between two and eleven months -i.e., < 1 year-after the first event (43%), however, in Cuba, Nicaragua and Panama in some patients the diagnosis was made after two or more years later. Earlier diagnosis (less than a...
year) was possibly due to the application of the 2010 McDonald Criteria. This occurred in the case of Panama [4]. Hazards present in the region are the shortage of neurologists in contrast to what is observed in the United States (2.1-6.2 × 10^5) and Europe (6.6 × 10^5) [8]; access to diagnostic technology, recognition of the disease by the health care system and the community, and social determinants are also limitations [9].

Six percent of patients with RRMS did not receive treatment, this proportion varying from 1% to 27% in some countries, suggesting lack of access to Disease Modifying Therapies in this population [10].

Although, some under reporting of cases may be present, the data from this study suggest, that MS in this region is a health problem. Additional studies should be carried out to determine the therapeutic response, disease burden, immunologic and genetic characterization, as well as, the development of educational programs for the scientific community, the general population and health decision makers.

Acknowledgements

We thank all the personal of the Universidad Interamericana de Panama and the Gorgas Memorial Institute of Health Studies.

Disclosure Statement and Sources of Funding

The authors have declared that no competing interests exist. FG and BA were supported by the DI-UIP633800 Dirección de Investigación, Universidad Interamericana de Panama and Gorgas Memorial Institute of Health Studies. BA is member of the SNI (Sistema Nacional de Investigación from SENACYT of Panama).

References


