



Multiple sclerosis prevalence in Salta City, Argentina

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ABSTRACT

Introduction: Multiple Sclerosis (MS) is one of the leading causes of disability in young adults. Its prevalence varies according to different countries. In Argentina there is a wide heterogeneity regarding data published in different areas of the country. Prevalence established in most studies is 17 cases per 100,000 inhabitants; however, most of the available data comes from studies that took place in Buenos Aires. There is little or no information from other provinces, especially from Northwest of Argentina (NOA), where there are no studies of the disease prevalence. The aim of this study is to investigate MS prevalence, phenotypes and epidemiological characteristics in Salta, Argentina, in order to contribute to the current knowledge of MS epidemiology and distribution in our country.

Methods: A descriptive, observational, transversal study was carried out in the capital city of Salta. Researchers from all public and private hospitals with a Neurology Department have participated. Private researchers who are well known leaders in demyelinating diseases in the city provided valuable information. Patients who did not have medical control for the past two years as well as patients whose last address was not registered in Salta were excluded.

Results: 120 registries were obtained from the four hospitals that participated and from the 12 private researchers. Ten patients were excluded due to overlapping data. The population of the area based on 2010 census was 535,310, so we estimated an MS prevalence 23.8 cases per 100,000 inhabitants (95% CI 20.1–27.4), 24.1 cases per 100,000 inhabitants in female population (95% CI 21.2–28.6) and 18.2 cases per 100,000 inhabitants (95% CI 15.2–21.1) in male population. In our analysis, 64 (58.2%) were female and the average age was 42.1 years. 81.8% are recurrent remitting forms, 16.4% secondary progressive and 1.8% primary progressive.

Conclusion: This is the first study that provides epidemiological data on the prevalence and clinical forms of MS in Salta City as well as in the entire Northwest Region of Argentina (NOA). We estimate a prevalence of 23.8 cases per 100,000 inhabitants, which establishes a moderate risk area for MS.

1. Introduction

Multiple sclerosis (MS) is a chronic, central nervous system demyelinating disease of unknown causes. Genetic and environmental factors have been described as possible causes in relation to its development. MS is the leading cause of disability in young adults after traumas.

Prevalence of MS varies according to different countries. North America and Europe have the highest rates (140 and 180 cases per 100,000 inhabitants respectively), whereas sub-Saharan Africa and East Asia have the lowest rates (2.1 and 2.2 per 100,000 inhabitants) (MSIF 2013).

Data published in Argentina show wide heterogeneity among different regions in Argentina. A meta-analysis in 2012 (Rojas et al., 2012)

described a prevalence of 17 per 100,000 inhabitants in most of the studies that were included; however lack of data from large regions of Argentina is also mentioned in this study. A previous study of the disease prevalence and incidence in Buenos Aires city for over 22 years was carried out in 2016 (Christian et al., 2016). Results describe an increase in the incidence especially in women and a prevalence of 25.6 cases every 1,000,000 inhabitants by December 2013.

There is a considerable controversy as regards the distribution of the disease in relation to latitude. Although previous studies (Simpson et al., 2011) show a positive correlation between prevalence of the disease and latitude, there are others that after sex and age adjustment the association seems to disappear or shows a decrease since 1980 (Zivadinov et al., 2003), or either demonstrate a decrease of this correlation since 1980 (Alonso and Hernan, 2008). Prevalence

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Fig. 1. Salta City. 24°47'18" S, 65°24'38" W.



Fig. 2. North West Argentinean Region.

according to latitude gradient was shown in countries such as Australia (Mccall et al., 1968), New Zealand (Taylor et al., 2010), Japan (Kuroiwa et al., 1983), Europe (Vukusic et al., 2007) and North America (Kurtzke et al., 1979). However, this relationship was not observed in Argentina, where the prevalence in Patagonia didn't show a geographic latitude gradient (Melcon et al., 2008). These results may be partial because of the lack of epidemiological prevalence data of MS in large areas of the country, as the greater percentage of information is from Buenos Aires city and there is little or no information from other provinces in the country. Salta is the capital city of Salta Province. It is located in the Northwest region of Argentina, which is confirmed by the provinces of Jujuy, Salta, Tucumán, Catamarca, La Rioja and Santiago del Estero (Figs. 1 and 2). It is located at 24°47'18" south latitude and 65°24'38" west longitude. As to date, there are no epidemiological studies about the prevalence of MS in the Northwest of Argentina. This is the reason why, it is of our main concern to investigate MS prevalence in our community in order to contribute to a more accurate knowledge of the geographical distribution of MS in Argentina as well as a better comprehension of the fisiopathology and probable causes of the disease.

The objectives of our study were to determine MS prevalence in Salta City, and the description in the studied population of Phenotype of Multiple sclerosis (Lublin, 2014), gender, age, age at time of diagnosis.

2. Material and methods

A descriptive observational study was carried out in Salta City, Argentina between August 15, 2017 and December 15, 2017. We invited at least one neurologist from every hospital in the city with a Neurology Department to participate. No hospital refused, so we had collaborators from all the Neurology Departments in both the public and private sectors. We also extended invitations to all the neurologists

Table 1
Baseline characteristics of MS patients in Salta City.

	Total n = 110
Current age (mean ± DS)	42.1 ± 12
Female (n, %)	64 (58.2).
EM - RR	90 (81.8).
EM - SP	18 (16.4).
EM-PP	2 (1.8).

in Salta City who work with patients with a diagnosis of multiple sclerosis. Only two refused.

The researchers used data from hospital databases and private registries to locate patients diagnosed with MS. Once the patients were identified, we made sure they met the inclusion and exclusion criteria and included them in the present study registry. We included in our study living MS patients (according to Mc Donald 2010 criteria) who's last registered address is in Salta City. Patients were excluded if they had not received treatment or had a medical visit during the past two years. Each researcher provided anonymous data from patients with an MS diagnosis, including the patient's initials, gender, birth date, phenotype of MS (Lublin, 2014) and month and year of diagnosis. Patients with incomplete information were also recorded. If the missing information had been name's initials or birth date, the overlapping of the other variables was taken into account. In case of coincidence, we got in contact with the researcher for more information.

Data was loaded in an Excell 2013 format. Analysis in relation to overlapping patients and prevalence was done through Stata 10.1 by Centro de Esclerosis Múltiple de Buenos Aires (CEMBA) that contributed to the study. Different data were analyzed through the IBM SPSS Statistics. We compared obtained records with estimated Salta

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