

Research Article

Epidemiology and Clinical Characteristics of Patients with Multiple Sclerosis in Tuzla-Canton, Bosnia and Herzegovina

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Abstract

Aim: of this study was to evaluate incidence, prevalence, the most frequent first symptoms of the patients with multiple sclerosis (MS) in Tuzla-canton (Bosnia and Herzegovina), then forms of disease and time that passed from first symptom at disease onset until diagnose verification.

Patients and Methods: The area of the Tuzla-canton (TC) is 2649 km². According to the last census done in 2013 in the area it was registered 477278 inhabitants. In this study it was analyzed medical records of hospitalized patients as well as records during follow-ups.

Results: The number of analyzed MS patients in TC is 243. Average age of patients at the moment of diagnose verification was 35.1 (SD ±10.8) and it was more women (178; 73.2%). Disease prevalence on December 31, 2013 is 50.4/100000. Incidence for 2013 is 2.5/100000. The most frequent is relapsing-remitting form of MS (207; 85.1%), then secondary-progressive (30; 12.4%) and the list frequent is primary-progressive (6; 2.5%). From the first symptoms at the disease onset until final diagnose of MS it passed 3 (SD ±4.5) years. The most frequent first symptoms were motor deficit (27%), then visual (20.3%) as well as sensitive disturbances (18.3%) and pain.

Conclusion: Prevalence of multiple sclerosis in Tuzla-Canton, Bosnia and Herzegovina, on December 31, 2013 is 50.4/100000 and incidence for 2013 is 2.5/100000. Incidence tends increasing but there is no statistical significance. From the first symptoms at the disease onset until definitive diagnose of MS passed 3 (SD ±4.5) years. The most frequent symptoms at disease onset are: motor deficit, visual and sensitive disturbance as well as pain. The most often is relapsing-remitting form of disease (85,1%).

Keywords: Multiple sclerosis; Tuzla-canton; Bosnia and Herzegovina

Introduction

Multiple sclerosis (MS) is a common chronic inflammatory disorder of the brain and spinal cord leading to damage of myelin sheaths and axons. Epidemiology of multiple sclerosis is not only implicated by geographical characteristics but also with distribution of both genetic and environmental factors [1]. MS patient can have almost any neurological symptom or sign but: visual, motor, and sensory problems accompanied with autonomic disturbances being the most common. It may be included: loss or changes of sensitivity such as tingling, pins and needles or numbness, muscle weakness, pronounced reflexes, muscle spasms, or difficulty in moving, difficulties with coordination and balance, problems with speech or swallowing, visual problems (nystagmus, optic neuritis or double vision), feeling tired, acute or chronic pain, bladder and bowel difficulties, among others [2]. However, in the early phase of the disease, some symptoms seem to be more frequent: blurred or double vision, clumsiness or a lack of coordination, loss of balance, numbness and tingling. Also, clinical course vary over time meaning worsening of the symptoms (relapse) followed by full or partial symptoms recovery (remission). There is no officially established

registry of MS patients in our country, and no epidemiologic data for MS on country level as well.

The aim of this study was to evaluate incidence, prevalence, the most frequent first symptoms of the patients with multiple sclerosis (MS) in Tuzla-canton (Bosnia and Herzegovina), then forms of disease and time that passed from first symptom at disease onset until diagnose verification.

Patients and Methods

The area of the Tuzla-canton (TC) is 2649 km² and it is consist of 13 municipalities (Figure 1). According to the last census done in 2013 in the area it was registered 477278 inhabitants. Department of Neurology - University Clinical Center Tuzla, is the only institution in TC fulfilling the diagnostic procedures for multiple sclerosis (MS) with in-patients and out-patients wards as well. All patients with suspected MS are sent for review by a family doctor only at the clinic due to lack of capacities for the diagnose of MS (no MR, EP's, oligoclonal bands...) in other health care institutions in TC. Revised McDonald Criteria for MS from 2010 was used for final diagnose. In this study it was analyzed medical records of hospitalized patients



Figure 1: Tuzla-Canton (red color), Bosnia and Herzegovina. CRO - Croatia, MN - Montenegro, SR – Serbia

as well as records during follow-ups. In statistical analysis it was used IBM SPSS Statistics v.21. The standard statistical parameters have been used: arithmetic mean, standard deviation, minimum and maximum values of characteristics, linear regression and absolute and percentage frequencies.

Results

The number of MS patients, all Caucasians, in TC until (and including) December 31, 2013 is 243, with average 43.9 (SD ±11.2) years of age.

Average age of patients at the moment of diagnose verification was 35.1 (SD ±10.8) and it was more women (178; 73.2% / 65; 27.8%). Disease prevalence on December 31, 2013, was 50.4/100000. Incidence for 2013 is 2.5/100000. Linear regression shows increasing incidence over period of interest, but with no statistical significance (Figure 2).

The most frequent is relapsing-remitting form of MS (207; 85.1%), then secondary-progressive (30; 12.4%) and the list frequent is primary-progressive (6; 2.5%) (Figure 3).

From the first symptoms at the disease onset until final diagnose

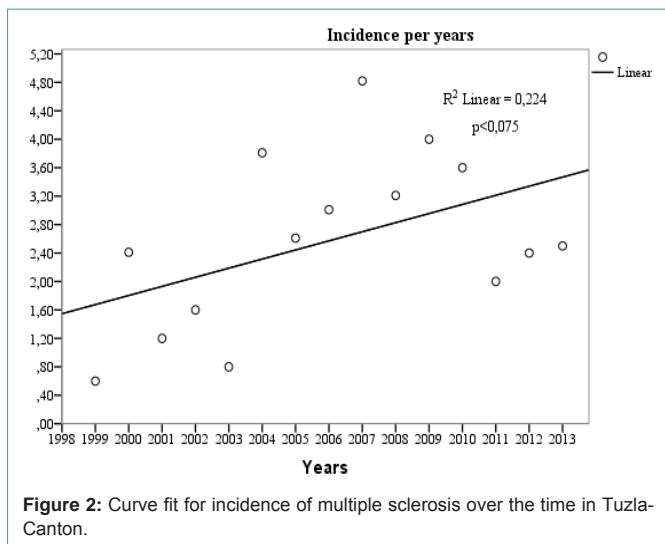


Figure 2: Curve fit for incidence of multiple sclerosis over the time in Tuzla-Canton.

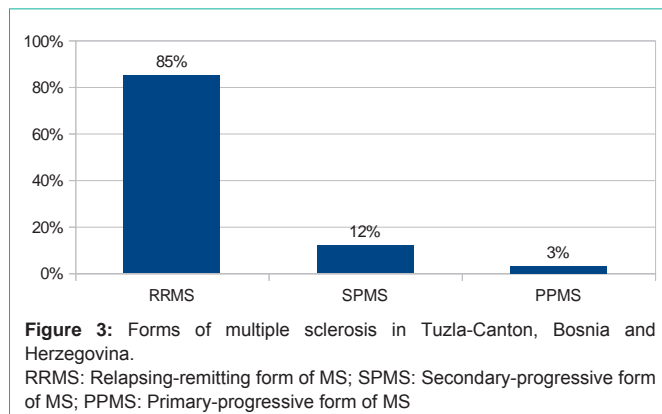


Figure 3: Forms of multiple sclerosis in Tuzla-Canton, Bosnia and Herzegovina. RRMS: Relapsing-remitting form of MS; SPMS: Secondary-progressive form of MS; PPMS: Primary-progressive form of MS

of MS it passed 3 (SD ±4.5). The most frequent first symptoms were motor deficit (27%), then visual (20.3%) as well as sensitive disturbances (18.3%) and pain (16.2%) (Figure 4).

Discussion

In previously conducted 7-years study in period (1982-1987) for the same area, primarily was pointed out lower both prevalence (7.8/100 000) and incidence rate for MS (1.3/100 000) [3]. Significantly lower prevalence and incidence is probably consequence of limited diagnostic possibilities in the 80's of the last century. Also, it is important fact that Bosnia and Herzegovina (BH) was Republic in the state of Yugoslavia and the patients had options to be treated in bigger centers (Belgrade, Zagreb, etc.).

Rosati in his paper [4] pointed out that data from former Yugoslavia are very limited. A prevalence rate of 20 per 100 000 was estimated in central Serbia in 1981 (cases were ascertained through hospital records). A national survey carried out in Slovenia in 1992 revealed a prevalence rate of 83 per 100 000. In Croatia prevalence rate ranged from 28 per 100 000 in Istria in 1981 to 40 in Zagreb in 1979. An exception to this range of frequency was represented by the small mountain community of Gorski Kotar, where the MS prevalence was 124 per 100 000, identical to that recorded in the neighboring region Kocevje, a small community in the mountainous part of Slovenia.

Epidemiological studies for all region of Bosnia and Herzegovina has not been done yet. Study that was conducted for 10-years period (1993-2003) for the area of Herzegovina, has shown prevalence 26.9/100 000 population and average incidence 1.64/100 000 population [5]. Another study done after this one, analyzed MS

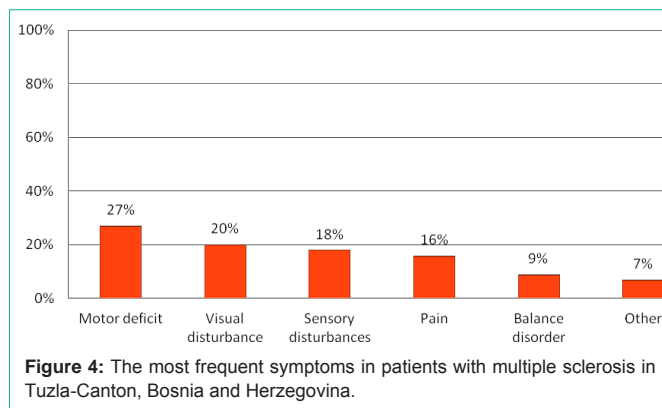


Figure 4: The most frequent symptoms in patients with multiple sclerosis in Tuzla-Canton, Bosnia and Herzegovina.

incidence for TC since 1999 [6]. Nevertheless, due to war we had no proper census. In that study, for period 1999-2012 the data have been collecting according to census done by Federal Institute for Statistic what was limited for our study. Our current epidemiological analysis has been done according to census done in 2013 and it was valid for evaluation. Studies in some other regions of the same altitudes like region of Padova, prevalence rate on 31 December 1980 and 31 December 1990 were 18/100 000 and 45/100 000 respectively. The mean annual incidence was 2.2/100 000 in the period 1980-89, 3.9 in the period 1990-94 and 4.2 in the period 1995-99 [7]. Otherwise, population-based studies in South America showed an MS prevalence rate ranging from 1.48 to 17 per 100 000 inhabitants [8]. In France, the risk of multiple sclerosis is considered medium to high risk. Several incidence and prevalence studies have been performed at regional and national levels. Prevalence is evaluated between 143 and 60 per 100 000 inhabitants. Prevalence of multiple sclerosis is higher in northeastern France. Incidence varies between 4.1 and 8.2 per 100 000 inhabitants depending on the region. In certain regions such as Lorraine, incidence among women seems to be on the rise [9]. In Slovenia and Croatia the crude annual prevalence per 100.000 population for Gorski kotar (Croatia)-Kocevje (Slovenia) region was 151.9 (95% CI 123.2-187. 28.7% of patients had a history of MS among first, second, or third-degree relatives. The frequency of primary progressive course of disease was 23.5%. The sex ratio (F/M) was 1.41 [10].

Some of the most common initial symptoms reported in literature are: changes in sensation in the arms, legs or face (33%), complete or partial vision loss (optic neuritis) (20%), weakness (13%), double vision (7%), unsteadiness when walking (5%), and balance problems (3%) [11,12]. Our results pointed out motor deficiency frequent the most, but other results we found correspond with results found in the literature. Also, we analyzed symptoms according to form of MS. Lublin and Reingold (1996) defined: relapsing-remitting, secondary-progressive, primary-progressive and progressive-relapsing MS [13]. In 80% of patients the disease begins with an acute episode affecting one (or occasionally several) sites, which is known as the clinically isolated syndrome [14]. In our study motor deficit was dominant symptom in primary-progressive MS, than in secondary-progressive MS. Otherwise, in relapsing-remitting form of MS all analyzed symptoms were presented with no significance.

Conclusion

Prevalence of multiple sclerosis in Tuzla-Canton, Bosnia and Herzegovina, on December 31, 2013 is 50.4/100000 and incidence

for 2013 is 2.5/100000. Incidence tends increasing but there is no statistical significance. From the first symptoms at the disease onset until definitive diagnose of MS it passed 3 (SD \pm 4.5) years. The most frequent symptoms at disease onset are: motor deficit, visual and sensitive disturbance as well as pain. The most often is relapsing-remitting form of disease.

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