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Restless Legs Syndrome in Patients with Hypertension and Diabetes Mellitus

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ABSTRACT

Aim: The aim of this study was to analyze frequency of restless legs syndrome (RLS) in patients with hypertension and diabetes mellitus. Patients and Methods: It was analyzed 120 subjects (from Health Center Živinice/Family Medicine Department) through a survey conducted in the period from March to June 2015, of which 30 (8 men/22 women). Subjects were 30 patients with longtime hypertension (HT)(18 men/12 women), 30 patients with diabetes mellitus (DM) type I or II (9 men/21 women), 30 patients with long standing DM type I or II and HT (12 men /18 women), and 30 control subjects (12 men/18 women). RLS were evaluated by questionnaire - International RLS Study Group Criteria. The average age of patients in the group with HT was 58.70 ± 9.07, in the group with DM 48.43 ± 15.37, and in the group of patients with HT and DM 63.90 ± 7.49 years. In the control group mean age was 52.76 ± 14.83 years. Statistical data were analyzed in Excel and SSPS statistical program. Results: RLS was identified in 10 (30%) of those with HT; 7 (21%) in patients with DM, and 10 (30%) in patients with HT+DM. In the control group RLS was verified in 4 (12%) patients. Comparing the results, it was observed significant difference between the HT and the control group (p=0.0012) and HT+ DM and control group (p=0.0012). The frequency of RLS between DM and the control group was not significantly significant (p=0.107). Conclusion: RLS is frequent in patients with hypertension (30%), hypertension+ diabetes mellitus (30%), and patients with DM (21%).

Key words: Restless Legs Syndrome, Hypertension, Diabetes Mellitus.

1. INTRODUCTION

Restless legs syndrome (RLS), also known as Willis–Ekbom disease, is a chronic neurosensorimotor disorder, characterized by an urge to move the legs which is often accompanied by uncomfortable or unpleasant sensations (1). In 1945, Ekbom has introduced RLS to medical literature; however, Sir Tomas Willis had described the symptoms 300 years earlier (2). Large community studies in Europe and North America show RLS prevalence rates from 4% to 29% in the general adult population. Prevalence increases with age and in the presence of coexisting morbidities, and it is higher in women (3). The four essential criteria are: a) urge to move the legs or other body parts usually accompanied or caused by unpleasant sensations; b) urge to move or unpleasant sensations begin or worsen during rest or inactivity; c) urge to move or unpleasant sensations are partially or totally relieved by movement; and d) urge to move or unpleasant sensations are worse in the evening or at night or occur only in the evening or at night (4). Supportive diagnostic criteria include family history and a positive response to treatment with levodopa and dopamine agonists (5, 6). RLS should be differentiated from akathisia, which is an urge to move the whole body in the absence of uncomfortable sensations (5). It may be primary (idiopathic) or secondary to diverse conditions, such as pregnancy,

end-stage renal disease, iron deficiency anemia, peripheral neuropathy (7). One of the leading hypotheses for the pathogenesis of RLS is that there is a dopaminergic deficit. The strongest evidence for this hypothesis is the efficacy of dopaminergic therapy (8). Examined possible mechanisms underlying the association between cardiovascular disease and RLS is sympathetic hyperactivity. Insufficient inhibition of sympathetic preganglionic neurons in the spinal cord may be the mechanism predisposing the patient to this sympathetic hyperactivity (9). Spinal cord excitability impairment may manifest as RLS sensorimotor symptoms. RLS symptoms are partially and temporarily relieved by movement and are particularly responsive to dopaminergic agents, thus supporting the hypothesis of an involvement of the diencephalospinal pathway (10).

2. METHODS AND PATIENTS

It was analyzed 120 subjects (from Health Center Živinice/Family Medicine Department) through a survey conducted in the period from March to June 2015, of which 30 (8 men/22 women). Subjects were 30 patients with longtime hypertension (HT)(18 men/12 women), 30 patients with diabetes mellitus (DM) type I or II (9 men/21 women), 30 patients with long standing DM type I or II and HT (12 men/18 women), and 30 control subjects (12 men/18 women). RLS were evaluated by questionnaire - International RLS Study Group Criteria. The four minimal criteria included: a) urge to move the legs, usually accompanied or caused by uncomfortable leg sensations; b) temporary relief with movement, partial or total relief from discomfort by walking or stretching; c) onset or worsening of symptoms at rest or inactivity, such as when lying down or sitting; d) an aggravation or onset of symptoms in the evening or at night (11). The International Restless Legs Syndrome Study Group rating scale (IRLS) is a validated disease-specific instrument for measuring RLS severity (12). The study was cross-sectional study. Statistical data were analyzed in Excel and SSPS statistical program.

3. RESULTS

The average age of patients in the group with HT was 58.70 ± 9.07, in the group with DM 48.43 ±15.37 and in the group of patients with HT and DM 63.90 ±7.49 years. In the control group mean age was 52.76±14.83 years. The most common age group in the group of patients with hypertension and the group of patients with diabetes/hypertension are 46 years and older (Figure 1).

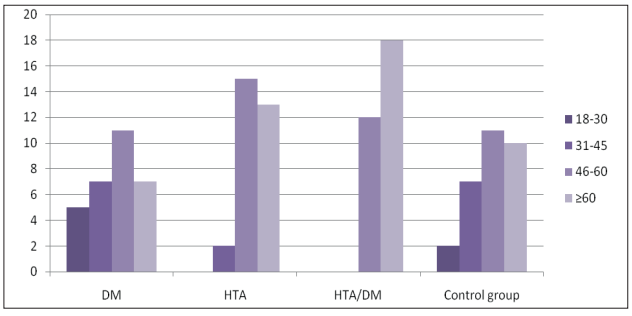

Figure 1. Distribution of examinees according to age and disease. DM=diabetes mellitus; HTA=hypertension; HTA/DM= diabetes mellitus + hypertension

RLS was identified in 10 (30%) of those with HT; 7 (21%) in patients with DM, and 10 (30%) in patients with HT+DM. In the control group RLS was verified in 4 (12%) patients.

Comparing the results, it was observed significant difference between the HT and the control group (p=0.0012) and HT+DM and control group (p=0.0012). However, the frequency of RLS between DM and the control group was not significant (p=0.107) (Figure 2).

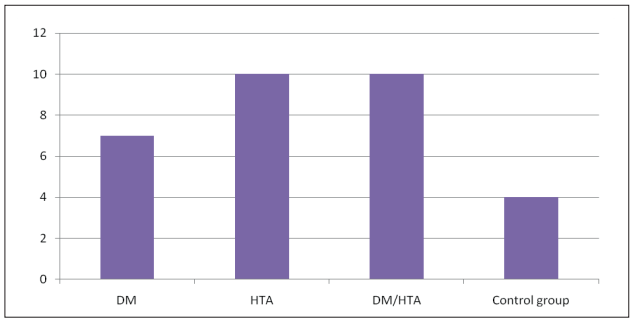

Figure 2. Frequency of restless legs syndrome in patients with DM, HTA, DM/HTA and control group. DM=diabetes mellitus; HTA=hypertension; HTA/DM= diabetes mellitus/hypertension

4. DISCUSSION

In our study RLS occurs more frequently in patients with hypertension compared to the control group (p=0.0012). Previous studies presented a data concerning the RLS syndrome and information on the possible links between RLS, cardiovascular disorders and diabetes mellitus (13). In the 1940s and 1950s, Ekbom remarked that RLS symptoms commonly co-occur with complaints of cold feet, which he hypothesized shared a common pathophysiology in vasoconstriction given his experience that vasodilatory agents brought relief (8).

Batool-Anwar et al. (14) in cross-sectional study included 65.544 women (aged 41-58 years), prevalence of hypertension was 33.0% (576/1748) among the group with more frequent RLS symptoms (>15 times/month), 26.0% (643/2475) within the group with RLS symptoms 5-14 times /month, and 21.4% (13104/61321) within the group with no RLS symptoms. This finding is consistent with other studies documenting associations between RLS and hypertension or cardiovascular disease (15). Similarly, in the Wisconsin Sleep Cohort a prospective community-based epidemiology study, Winkelman et al. (9) reported a high incidence of hypertension and cardiovascular disease in individuals with RLS.

The association between RLS and hypertension or cardiovascular disease (CVD) also may be dependent on the severity of the RLS at baseline or the duration of the disease. This was clearly the case in the studies by Li et al. (16) in which the duration of disease and severity of PLMS led to higher risks of CVD. Given these differences in study design, however, the variability with which the results point to an association between RLS/PLMS and hypertension and more so CVD, illustrates the complexity of the interaction between RLS and CVD in the selected sample populations (17).

In the study, Merlino et al. (18) which investigated 124 consecutive patients with type diabetes and control group consisted of 87 consecutive patients who were attending the endocrinology department for regular follow-up of previously diagnosed and treated endocrine disorders other than diabetes, prevalence of RLS in diabetic patients (17.7%) was significantly higher than that reported in the general population, ranging from 5% to 10%, in our study patients with diabetes mellitus have complained of symptoms of burning, pain, circulation in the legs that do not meet the criteria of RLS study group.

3. CONCLUSION

Restless legs syndrome is frequent disorder in patients with hypertension (30%), hypertension + diabetes mellitus (30%), and in patients with diabetes mellitus (21%). Frequency is statistically more significant in patients with HT and with HT+DB, then in the controls but not in the patients with DB alone. RLS is a common disorder in the general population and efforts must be made to improve physician awareness. Because it can have a devastating effect on the quality of life, it is imperative that patients be diagnosed and offered treatment.

- **Author's contribution:** Adela Sabic, substantial contribution to conception and design, substantial contribution to acquisition of data, substantial contribution to analysis and interpretation of data, drafting the article. Osman Sinanovic, substantial contribution to conception and design, final approval of the version to be published. Critically revising the article for important intellectual content. Dzevad Sabic, substantial contribution to conception and design, substantial contribution to acquisition of data, substantial contribution to analysis and interpretation of data, drafting the article. Gordan Galic, drafting the article.
- **Conflict of interest:** none declared.

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