Original article

Determination of restless legs syndrome prevalence in children aged 13–16 years in the provincial center of Kayseri

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Abstract

Objective: This study was conducted to determine the prevalence rate of restless legs syndrome (RLS) and associated factors in adolescents aged 13–16 years in the provincial center of Kayseri.

Materials and methods: The study sample included 5720 adolescents who were selected from among 74,421 grade 7–10 students aged 13–16 years in the provincial center of Kayseri. Overall, datas from 4792 subjects were included into analysis. Data were collected by using a self reported questionnaire and the Epworth Sleepiness Scale (ESS). The prevalence rate of RLS was determined by questionnaire datas and phone interviews. The effects of age, gender, economical status and body weight on RLS prevalence rate were analyzed. Mean ESS score was calculated. The effect of RLS on academic success, as measured by grade point average, was also assessed. The subjects were stratified as underweight, normal, overweight and obese according to the body mass index and the RLS prevalence rate was compared among groups.

Results: The RLS prevalence rate was determined to be 2.9% among adolescents aged 13–16 years in the study group. It was found that gender and economical status had no significant effect on RLS prevalence. Mean age at symptom onset was 11.4 years of age. There was a positive family history in 11.3% of subjects. Mean body mass index (BMI) was found to be significantly higher in subjects with RLS (21.5 ± 3.8 vs. 20.5 ± 3.2). Academic success (72.0 ± 11.2 vs. 77.0 ± 12.0) was found to be poorer and daytime sleepiness level, as measured by ESS (11.4 ± 3.9 vs. 6.3 ± 4.0), was found to be higher in subjects with RLS.

Conclusion: The RLS prevalence rate was 2.9% in the study sample while gender and economical status had no significant effect on prevalence rate. The RLS, which results in decreased sleep quality and academic success, is an important disorder with a considerable prevalence in the population.

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1. Introduction

Restless legs syndrome (RLS) is a sensory-motor disorder characterized by feelings of discomfort, causing the desire to move the legs. RLS symptoms worsen while resting, sitting or lying down, and partially or wholly ease while moving the legs or walking. Symptoms typically worsen during the evening [1–4]. Dopaminergic dysfunction and low iron storage status have been shown to play a role in the etiology so iron supplements and dopaminergic drugs used in treatment [5].

Restless legs syndrome was first mentioned by Thomas Willis in 1685 but the condition was fully defined by Karl-Axel Ekbom in 1945 [6]. It was first demonstrated in children by Walters et al. in 1994 [7]. Pediatric diagnostic criteria are used for 2–12 year old children while adult diagnosis criteria are used for 13–18 year old children [8,9].

Studies carried out with adults show that RLS prevalence ranges between 5% and 10% [2]. Studies conducted on RLS frequency are more limited. The study carried out by Picchietti et al. [10] and recognized as the most comprehensive epidemiological study conducted until now suggests that RLS is seen more often than epilepsy and diabetes in children. However, it continues to be a diagnosis which seldom occurs to physicians.

This study was carried out to identify RSL prevalence in 13–16 year old adolescents in the provincial center of Kayseri and to evaluate the effect of socio-demographic characteristics on RLS prevalence and the relation of RLS with daytime sleepiness and success at school.

2. Material and method

The total number of students enrolled in the 7-10th grades, which are attended by the 13–16 age group to be in the provincial center of Kayseri was identified as 74,421. RLS prevalence was assumed about 2% in the same age group [10]. Minimum sample size was calculated as 4518, taking the confidence level as 95% and tolerance value as 0.05. Considering that about 25% of students included in the sample could not be reached, it was planned to include 6000 subjects in the sample. Ethical approval was obtained for the study, from Erciyes University Faculty of Medicine Ethical Committee for Clinical Research, and an administrative permit was obtained from the Provincial Directorate of Education in Kayseri.

Out of 262 schools in the provincial center of Kayseri, 62 schools were randomly selected, and of these schools, 220 classes were randomly selected. In April–May 2014, the researchers handed out the informed consent form to a total of 5907 students in those classes. Questionnaires were distributed and after giving information about the survey, participants were asked to fill questionnaires with help from their parents at home. Of these 4943 students for whose the informed consent forms were signed by their parents were asked to fill in the questionnaire. Data in a total of 151 questionnaires were excluded from the study because of their insufficiency or being incompliant with the age range of the study group. Therefore, 4792 questionnaires were included in the evaluation.

Data were collected through the questionnaire consisting of 45 questions prepared by the researchers with using literature [8,9,11], and the Epworth Sleepiness Scale (ESS) [12]. The questionnaire assessed RLS diagnostic criteria using 5 questions and those criteria were re-questioned using 6 cross questions. Four questions were related to differential diagnoses, 11 to the characteristics of RLS cases, and the other questions to socio-demographic characteristics, sleep pattern and attention deficit-hyperactivity disorder (ADHD) symptoms, and grade-point averages in the last semester. RLS mimics (leg cramps, growing pains, positional discomfort) were explained and then questioned. For questions; like age of onset of symptoms, the family's economic status, parents' education level, previous diagnosed diseases and medication; "do consult your family" expression was used.

A total of 149 participants were called by phone who answered 5 question of the RLS diagnostic criteria as yes; and responding to cross question consistent with diagnostic criteria. In the 15–30 min phone conversation with participants and/or their parents, diagnostic criteria were questioned again and RLS mimics were explained and questioned. In eight subjects, situations imitating RLS and incorrect data were identified. Therefore, 141 participants were accepted as having RLS. The RLS prevalence rate was calculated using the data obtained, and the effect of various socio-demographic factors on RLS prevalence was evaluated. An ESS score equal to or above 10 was considered as daytime sleepiness.

The body mass indexes (BMI) of the students were calculated using their weight and height figures. Based on the BMI percentile values of children in the province of Kayseri [13], children below the 5th percentile were classified as thin, those between 5 and 85 as normal, those between 85 and 95 as overweight, and those above 95 as obese, and RLS prevalence rates were compared based on these groups.

Data were assessed using SPSS 15.0 package software. The consistency of quantitative data with normal distribution was tested by the Kolmogorov–Smirnov test. Pearson's chi-square test, Fisher's exact test, unpaired t-test, one-way ANOVA test (post hoc Scheffe test), and logistic regression analysis were used for statistical analyses. $p < 0.05$ values were considered significant.