PHYSICAL ACTIVITY AND SPORTS IN PATIENTS WITH EPILEPSY

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Article History:
Received: December 22, 2019
Accepted: December 26, 2019
Published: January 1, 2020

Cite this as:
Odintsova GV, Koloteva AV, Lovyagina AE. Physical activity and sports in patients with epilepsy. Malang Neurology Journal; 2020:6: 34-38.
http://dx.doi.org/10.21776/ub.mnj.2020.006.01.8

ABSTRACT

Background: For many years, patients with epilepsy have been strongly advised to avoid sports and exercise, as it was believed that sporting activities can trigger seizures.

Objective: To study the level of physical and sporting activity on the example of the patients of the Russian Epilepsy Center.

Methods: The study includes 50 patients with a verified diagnosis of epilepsy. The survey has been conducted according to a specially developed questionnaire "Peculiarities of physical activity in patients with epilepsy", clinical and demographic study.

Results: The average age is 29.6 years +/- 8.3. 57.2% of patients had restrictions on physical activity at school due to epilepsy. Motor activity was assessed as low by 12% of patients, as average — by 60%, as high — by 28%.

Conclusion: Physical activity of patients with epilepsy remains insufficient due to medical and social restrictions. In most cases, physical activity and sports do not trigger seizures and worsening of the disease. Expansion of sports opportunities will improve social adaptation and reduce stigmatization with epilepsy. A differentiated approach to the definition of indications for sports and the engagement of a neurologist to determine contraindications is necessary.

Keywords: Epilepsy, sports, physical activity, restrictions

Introduction

The problem of physical activity and sports in epilepsy is relevant due to medical and social reasons. Epilepsy is one of the most stigmatizing diseases of the nervous system.¹,² People with epilepsy are often banned from playing sports and doing exercise, mainly because of fear to trigger seizures.³ This impairs social adaptation, mental and somatic health, reduces the possibility to minimize the side effects of anti-epileptic drugs.⁴ In most cases, epilepsy onset occurs in childhood, which causes the immediacy of the problem for patients of all ages.⁵ In most children with epilepsy, physical activity is reduced due to unjustified restrictions, which negatively affects their overall health and quality of life.⁶ Social deprivation of patients in relation to physical activity negatively affects the psychological mood of people. Social isolation is particularly prevalent in adolescence and adolescents with epilepsy are less active than their healthy siblings. Sedentary lifestyle negatively affects psychosocial development and mental health. Restriction of physical activity along with the use of many anti-epileptic drugs that increase weight often leads to obesity.⁷ Such situations are most common when using valproic acid drugs in children and adults.⁸ The extensive use of valproic acid drugs is conditioned by the fact that they are the first-line drugs of choice for genetic (idiopathic) generalized forms of the disease, which make up to 35% in the population of people with epilepsy.⁹ Weight gain is typical not only for drugs of the old generation, such as carbamazepine and barbiturates, but also for drugs of the modern generation. Weight gain is a side effect of levetiracetam. Limitation of physical activity in epilepsy as an overprotection is an adverse factor, also contributing to depression and impairing the control of seizures.¹⁰ At the same time, there is conflicting evidence testifying that exercise and sports may have a positive impact on seizure control in addition to overall health benefits and psychosocial adaptation.¹¹ The international League Against Epilepsy created a special group to study physical activity and sports in epilepsy, which in 2016 under the guidance of G. Capovilla¹² published a special report "Epilepsy, Seizures, Exercise and Sport", classifying indications and contraindications in epilepsy. However, the approaches to physical activity and sports in epilepsy remain restrictive. The reason is the lack of research activity and awareness of the practical aspects of the problem. The purpose is to study the level of physical and sporting activity on the example of the patients of the Russian Epilepsy Centre.

Methods

The study was conducted on the basis of Prof. A.L. Polenov Russian Neurosurgical Research Institute, in outpatient and inpatient departments of the Russian Epilepsy Center in 2018-2019.
The study includes the patients with a verified diagnosis of epilepsy. Inclusion criteria: age over 18 years, duration of epilepsy over 3 years. Exclusion criteria: cognitive impairment, preventing the understanding of the questionnaire; motor disorders that limit physical activity.

Demographic and clinical indicators (gender, age, place of residence, age of onset, form of epilepsy, type of course) were studied. Together with the Department of Psychology of the St. Petersburg State University a special survey "Peculiarities of physical activity in patients with epilepsy" has been developed. There are 3 groups of questions: 1 group is about the level of physical activity and sports in school years, 2 group is about the assessment of current motor activity, 3 group is about the impact of physical activity on the course of the disease (triggers/reduces the seizures frequency). The patients have been interviewed according to the questionnaire.

An overview of the recommendations of the Sports Commission of the International League Against Epilepsy "Epilepsy, Seizures, Exercise and Sports" of 2016 has been presented. All patients have been signed informed consent statements. The study has been approved by the Ethics Committee.

Statistical processing of the results has been carried out using the methods of descriptive statistics of SPSS statistical program.

Results

The study includes 50 patients with a verified diagnosis of epilepsy according to the epilepsy classification of the International League Against Epilepsy (ILAE, 2017), based on a combination of clinical, electroneurophysiological and neuroradiological data. The average age was 29.6 years +/- 8.3, ranged from 18 to 53 years. The majority of the patients were of the optimal reproductive age, which characterizes the cohort of patients with epilepsy in general. The distribution by gender was not statistically different; the ratio of men and women was 48% and 52%, respectively. Distribution by type of epilepsy: patients with focal epilepsy prevailed - 80%. Generalized forms of epilepsy made up 20%. Temporal lobe epilepsy prevailed among the focal forms. These features are attributable to the neurosurgical profile of the medical institution and differ from the populational in epilepsy in favour of the prevalence of focal forms of the disease and the dominance of temporal lobe epilepsy.

All patients had an active form of epilepsy, patients with a controlled course of the disease prevailed - 56%, of which 25% were in remission. Remission of seizures in epilepsy is considered their absence for 12 months or the period between seizures three times longer, than the longest one. Seizures persisted in 44% of patients. The patients who addressed to the Epilepsy Center again to monitor the results of medical or surgical treatment prevailed in the sampling.

The onset of the disease at preschool age (0-6 years) was observed in 30%, at school age (7-18 years) - 54%, in adulthood (over 18 years) - 16%.

In 8 patients out of 50, the onset of epilepsy was observed after school age (16%). All of them attended physical education classes at school and played sports, 4 of them attended regularly and 4 - from time to time.

The answers of the patients with epilepsy onset in childhood and adolescence were taken into account in the first group of questions in the survey. 42 patients (Table 1) were involved in the study on physical activity and sports in childhood.

57.2% of the patients had restrictions on physical education at school due to epilepsy. Despite the fact that the onset of epilepsy at preschool age was observed in 30% of the patients, only half of them never attended physical education classes at school. At seizures control, children tried to keep up with their peers in terms of physical activity.

However, the rate of exercise in epilepsy is affected significantly. Among the patients with epilepsy onset at school age, most had to leave sports after the onset of the disease. After the onset of epilepsy, the patients were practically exempted from physical education classes at school and had to stop playing sports. (figure 2)

The second group of questions addressed the assessment of motor activity at present time, which was graded as low, medium, high in the questionnaire. Motor activity was assessed as low by 12% of the patients, as average — by 60%, as high — by 28%. (Figure 3)

An important group of questions was the assessment of the impact of physical activity on the course of epilepsy. According to the results of the study, physical activity triggered seizures in 30% of patients, of which 2 (4%) persons always had an effect of physical activity, 13 (26%) persons had a partial effect of physical activity on the frequency and severity of seizures. At the same time, almost the same number of respondents - 26 % - noted the positive impact of physical activity on the course of the disease. 9 (18%) people said that regular physical activity reduced the frequency of seizures, 4 (8%) people noted a partial improvement. In 22 (44%) respondents, physical activity did not affect the frequency and severity of seizures. Thus, no negative impact of physical activity on the course of the disease was noted in 70% of patients.

Table 1. Level of physical activity at school age

|                        | Never |      | Sometimes |      | Always |      |
|------------------------|-------|------|-----------|------|--------|------|
| Attending physical     |       |      |           |      |        |      |
| Education classes at   | 6     | 14.4 | 18        | 42.8 | 18     | 42.8 |
| school                 |       |      |           |      |        |      |

MNJ (Malang Neurology Journal) Vol. 6, No. 1, January 2020
Figure 1. Age of epilepsy onset

Figure 2. Exemption from physical education classes due to epilepsy.
Discussion

Thus, the study showed the restriction of physical education and sports at school age, as well as a low level of physical activity in adulthood, associated with epilepsy. At the same time, a minority of the patients associated seizures and worsening of the course of the disease with physical activity. According to the Sport Commission of the International League Against Epilepsy, the choice of the type of physical activity and sport for a person with epilepsy requires to take into account personal preferences, health status, history of relative factors triggering seizures, severity of seizures. It is considered appropriate, that recommendations on the possibility to play a certain sport should take into account the likelihood of a seizure and the clinical features of the disease of a certain patient. In 1998 Arida R.M. with the co-authors already showed on animal models of seizures and epilepsy, that aerobic training slows down the epileptogenic process. The recommendations classify all sports into 3 categories based on the potential risk of injury or death in case of a seizure. Group 1 (without significant additional risk) includes sports in which the occurrence of seizures does not pose a risk of injury to both a person with epilepsy and third parties (other athletes, judges or spectators), group 2 (moderate risk) includes sports with a moderate risk of injury to people with epilepsy, but without risk to third parties, group 3 (major risk) entails a high risk of injury or death for people with epilepsy, and in some sports for third parties.

The first group includes the following sports: athletics (except pole vaulting), bowling, most wrestling (except involving potentially serious injuries), curling, dancing, golf, team sports on the ground, basketball, football, volleyball, grass hockey, cross-country skiing, racket sports (table tennis, tennis, etc.)

Sports activities included in the first group are allowed to the patients with remission, as well as with seizures without alteration of consciousness and with seizures only during sleep. With seizures with alteration of consciousness, a neurologist's permission is required for Group 1 sports.

The remission of seizures for 12 months or more allows sports of all groups, but sports of group 2 and 3 require a permission of a neurologist.

When epilepsy is resolved (no seizures for over 5 years and after 5 years after drug withdrawal), sports of all 3 groups are allowed.

The Commission of the International League Against Epilepsy confirms that sports and exercise have positive medical and psychosocial effects for patients with epilepsy, including increased self-esteem, improved socialization and overall health in the long term. However, historically established beliefs regarding the limitation of physical activity in epilepsy still prevent people with epilepsy from sports. Recommendations for sports groups are applicable to both amateur sports and professional sports and are also relevant for all age groups.

Children and teenagers can take part in sporting events at school according to the risk classification of sports. These recommendations are not final; the League Against Epilepsy recognises that further scientific research on the subject is needed to ensure the improved recommendations. Implementation of recommendations in practical life, their legislative approval is a vital task. Our study has confirmed the necessity to continue work on this topic.

Conclusion

Physical activity of patients with epilepsy remains insufficient due to medical and social restrictions. In most cases, physical activity and sport do not trigger seizures and worsening of the disease. Expansion of the sporting opportunities will improve social adaptation and reduce stigmatization with epilepsy. A differentiated approach to the definition of indications for sports and the engagement of a neurologist to determine contraindications are necessary.

Conflict of Interest

None of the authors has any conflict of interest to disclose.

Acknowledgement

The reported study was funded by Russian Foundation for Basic Research (RFBR) according to the research project № 18-013-00222.

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