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THE ROLE OF PHYSICAL EXERCISES IN THE MANAGEMENT OF PATIENTS WITH IDIOPATIC INFLAMATORY MIOPATHIES

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Abstract. *Idiopathic inflammatory myopathies are a group of autoimmune diseases involving scapular and pelvic muscles, the main symptom being muscular weakness. Nowadays management of IIM involves medical treatment, physiotherapy and physical therapy. Physical therapy has long been underestimated, older studies communicating the possibility of aggravating the inflammatory process, but recent research has hypothesized the necessity and utility of exercise as a rehabilitation method.*
Keywords: *idiopathic inflammatory myopathies, exercise, kinetotherapy.*

Introduction. Idiopathic inflammatory myopathies (MII) are a group of autoimmune diseases that involve the scapular and pelvic muscles, the main symptom being muscular asthenia [7]. In the literature, there are several sets of diagnostic and classification criteria with different sensitivity and specificity, but the Bohan and Peter criteria remain current and are accepted by researchers in the field of myopathies diagnose [6]. These criteria involve the presence of proximal, symmetrical, progressive muscle weakness, elevated serum creatine phosphokinase or other specific muscle enzymes such as ALAT, ASAT and / or LDH, specific electromyography abnormalities, and muscle biopsy results. In case of dermatomyositis it is necessary to be present pathognomonic skin signs such as heliotrophic rash and Gottron papules [4]. At the onset of the disease, the most common difficulty is encountered in carrying out lifting movements, lifting from the seat, with a low capacity for aerobic exercise. Notable, that diagnosis and delayed treatment lead to the occurrence of muscle atrophy. Contemporary management of myopathies includes the treatment of glucocorticosteroids and / or immunosuppressants, physiotherapy and physical therapy. Opinions on kinetotherapy, as a method of rehabilitation of patients with IIM, are controversial. On the one hand, physical exercise could be a way of preventing or delaying the negative effects of the disease and hence a reduction in disability in myopathic patients; on the other hand, older studies have discouraged physical effort, liable to aggravate inflammatory process [2,3]. Recent research reports data on beneficial effects of exercise in patients with myopathies, dominantly in clinical remission [1,2,5]. The study led Munters, showed that exercise might improve muscle strength even in the most affected muscle groups and may reduce disease activity in patients with myopathies [1].

Current research discusses the need for a complex and multidisciplinary approach to the management of patients with idiopathic inflammatory myopathies, including their physical rehabilitation [1, 3, 8].

Aim of the research: Assessment of the effectiveness of physical exercise in the rehabilitation of patients with idiopathic inflammatory myopathies.

Methods and Materials: We conducted a cross-sectional study between May 2016 and May 2017 in the rheumatology department of the PMI Institute of Cardiology, on a group of 57 patients with myopathies, according to the Bohan and Peter [4] criteria. Demographics and clinical-statutory data were collected according to our ques-

tionnaire. The clinical tools applied were: Patient Global Activity-PGA assessment by VAS scale (0-100mm), muscle strength estimated by Manual Muscle Test of 8 muscle groups (MMT-8) and quality of life , appreciated by the SF-8 questionnaire, with physical and mental components [9,10]. The degree of disability was appreciated by the Rankin scale. During the hospital stay, the patients followed an exercise program for 5 days, then the same set of exercises was done at home, the next 3 weeks, the duration of each session was 15 minutes. Each patient was individually trained by a kinetotherapist, a member of the multidisciplinary team, to carry out the exercise program that included warming by lifting and sitting movements, subsequent exercises directed to shoulder mobility and gripping movements, then strength exercises for the hip muscles and quadriceps, abdominal and stretch exercises. In order to achieve the propose, we applied the clinical tools and the questionnaire at the beginning of the rehabilitation program, on the 5th day of physical rehabilitation and after 3 weeks of home exercises. The study was endorsed by the Scientific Research Committee of SUMPh "Nicolae Testemitanu" on May 23, 2016.

Results and discussions: We selected for the research 20 patients with myopathies who received complex treatment in the stationary department. The general characteristic of the patients included in the study is shown in Table 1.

Table 1. General characteristics of patients with idiopathic inflammatory myopathy (n = 20)

Variables	Patients with MII, Nr abs	Patients with MII, %
Gender		
• female	15	75
• male	5	25
Place of residence		
• urban	8	40
• rural	12	60
Mandatory health insurance	20	100
Matrimonial status		
• married	18	90
• divorced	1	5
• single	1	5
Employment status		
• full day	4	20
• part-time	3	15
• in training	2	10
• housewife	1	5
• pensioner	10	50
• independent activity	1	5
Rankin scale of disability		
• 1st degree	6	30
• 2nd degree	7	35
• 3rd degree	4	20
• 4th degree	3	15

Data presented in table 1 indicates that in the study group women predominated in a ratio of 3: 1 and patients in rural areas. All hospitalized patients benefited from medical treatment and medical rehabilitation based on mandatory medical insurance.

We determined the social status of the patients, so in the study group the married persons prevail - 90 percent. Another aspect was the employment status. To be noted that over a third (35%) of patients were employed, 4 of them full-time and 3 part-time. Of the 13 unemployed patients, 10 had disability due to illness.

Because patients may have varying degrees of disability with a progressive decrease in self-care capacity, we have assessed the degree of disability in patients who have undergone the physical rehabilitation program. In 6 patients we rated 1st degree according to the Rankin scale, another 7 subjects had the second degree, which can be interpreted as easy disability and moderate disability was scored by 3 and 4 points.

Concerning the study years - they averaged 12.2±2.5 years, so we can conclude that patients had a middle level of education (Table 2). The mean age at the time of research was 51.61±1.1, varying from 25 to 67 years. The assessed patients had an average disease duration of 75.1 ± 65.9 months, which is 6.25 years.

Table 2. Clinical-evolutionary status

Variables	Average
Study years, months (±SD)	12.2±2.5 (i-v 9-17)
Average age at the time of research, years (±SD)	51.6±11.1 (i-v 25-67)
Mean age at onset of disease, years (±SD)	43.7±14.3 (i-v 19-66)
Average disease duration, months (±SD)	75.1±65.9 (i-v 6-216)

Treatment regimens of patients in the study group are shown in fig. 1, we specify that 4 subjects that administered azathioprine (AZA) and other 4 - methotrexate (MTX) also were taking glucocorticosteroids (GCS), the mean dose was 12.9 mg of prednisolone equivalent.

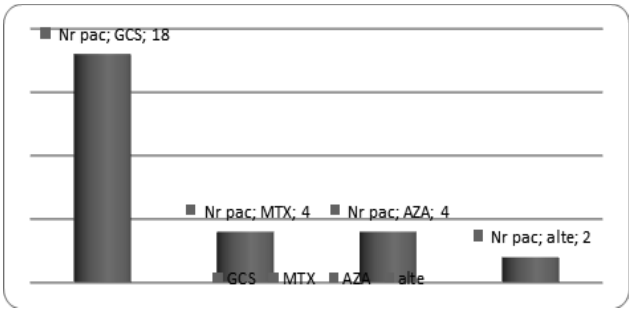

Fig. 1. Therapeutic regimens of patients with IIM

To assess patient status, we evaluated the overall disease activity. PGA variations according to the stage of the exercise program are illustrated in fig. 2. Thus, we can observe that on day one patients have appreciated the 42.2 mm disease activity, which corresponds to an average degree of activity. At day 5 of exercise, the PGA increased by 3.3 mm, representing 45.5mm (p> 0.05) statistically insignificant. This increase can be explained by the increase in physical pain caused by physical activity. It should be noted that at the end of the 4 weeks of kinetotherapeutic rehabilitation the PGA decreased to 32.6 mm (p <0.05), which demonstrates the improvement of the status of the patient with myopathies, statistically significant.

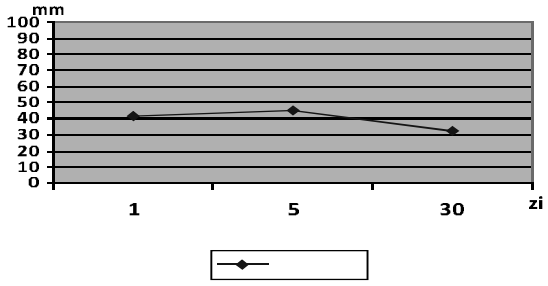

Fig. 2. PGA indices in patients with myopathies

We would like to point out that the exercise program was well tolerated by the patients, there were no adverse reactions or intolerance to the therapeutic program. The manual muscle test used for determination of muscle strength served as another indicator for the effectiveness of kinetotherapy in patients in the study group. The data presented in figure 3 shows a gradual increase in MMT-8 values, from 52.4 to study inclusion to 53.1 points at day 5 of exercise, the increase was statistically insignificant (p> 0.05). Notably, that after 4 weeks of physical rehabilitation, the muscular force achieved a maximum of 68.5 points, compared to day 5, an important increase, statistically significant (p <0.05).

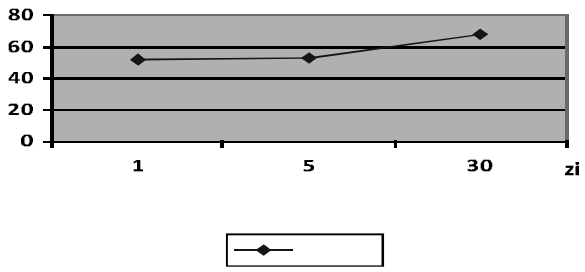

Fig. 3. MMT-8 indices in patients with myopathies

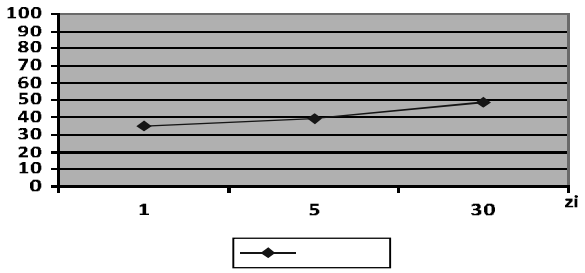

Fig. 4. SF-8 physical indices in patients with myopathies`

In this context we have noticed an important aspect in the research of idiopathic inflammatory myopathies - the quality of life. We determined the quality of life through the SF-8 questionnaire, the mental and physical component. The results of our research revealed a low quality of life (figure 4). At the onset of the exercise program, the physical component of SF-8 was 35.1, which is low. At day 5 of the exercises, a slight improvement of - 39.1 (p> 0.05) is observed, a tendency

kept on the 30th day. The physical component of SF-8 is 48.9 (figure 4). It should be noted that all three results are below the reference value of 50, appreciated in the healthy population.

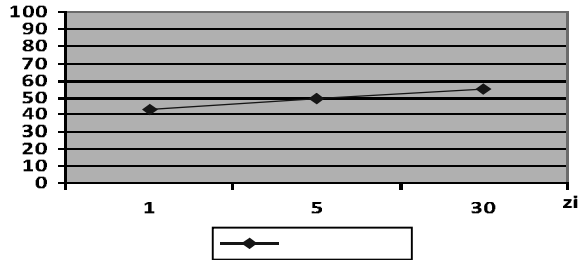

Fig. 5. SF-8 mental indices in patients with myopathies

In the following we analyzed the quality of life through the mental component of SF-8, so at the beginning of the exercises the patients had a value of 42.8 being lower than the reference one. After 5 days of exercise the mental component increased insignificantly - 49.8, ($p > 0.05$), at the third assessment - after 30 days, the quality of life increased till 55.2 ($p < 0.05$).

Conclusion: The results of the research have shown the effectiveness of exercise in patients with idiopathic inflammatory myopathies by diminishing disease activity assessed by Patient Global Assessment, from 42.2mm to 32.6 mm ($p < 0.05$), and increasing muscle strength, from 52.4 at study inclusion to 68.5 points at day 30 of exercise, the increase was statistically significant.

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