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PHYSICAL ACTIVITY AND HEALTH SELF-ASSESSMENT OF PATIENTS SUFFERING FROM SARCOIDOSIS

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Summary

Introduction: Sarcoidosis is a multiorgan granulation disease of unknown etiology. Adults, young and middle-aged most often suffer from this disease. Clinically, bilateral enlargement of the lymph nodes, lung cavities, as well as infiltration of the lung can be observed. The disease can also affect the skin, the organ of vision, liver, spleen, heart, lymph nodes, salivary glands, nervous system, muscles, bones, and more. The characteristic pathological feature of the disease is the presence of noncaseating granuloma, which are localized in the affected organs and tissues.

Aim of the study: Determination of some elements of lifestyle of people with sarcoidosis, with particular emphasis on physical activity.

Material and Methods: The study consisted of an original questionnaire containing questions about gender, age, body weight, and sociometric variables associated with the disease and the accompanying two questionnaires: SF36 health status and physical activity SEWL. For statistical analysis were used: descriptive statistics - mean and standard deviation were calculated, the degree of difference was calculated using ANOVA Kruskall-Wallis. Accepted level of statistical significance: $p \leq 0.05$.

Results: The results of the study found statistically significant differences in women - because of the degree of sarcoidosis in mental well-being. In men, the differences were observed only in the physical component of health. The analysis on the indicators of work, sport and leisure time showed the only differences in the rate of labor in men. Other indicators in men and all women did not show statistical significance. The study showed that the vast majority of respondents of both women and men has changed the way of life due to illness.

Conclusions:

1. The most common symptoms of the disease among the respondents are: swelling of the feet, rash, shortness of breath and increased body temperature, which affect the functioning and physical well-being as well as mental component of health and social functioning.
2. Most of the respondents modified their lifestyle under the influence of the disease.

Keywords: sarcoidosis, physical activity, self-assessment of health

Introduction

Sarcoidosis is a multiorgan granulation disease of unknown etiology. It may be asymptomatic or with constitutional symptoms and the clinical picture depends on the type/form of disease. The most common symptoms of this disease include bilateral lymphadenopathy, elevated body temperature, malaise, weakness and fatigue. Body weight decreases in some patients and there are night sweats. Specific symptoms are characteristic for the particular form of the disease. The appearance of grains, made up of epithelial cells, macrophages and lymphocytes in the affected tissues is a characteristic feature of the disease. [1,2,3].

Laboratory diagnosis of this disease include elevated levels of calcium in the blood and its increased excretion in the urine. A negative tuberculin skin test is stated, as well as reduced reactivity of T lymphocytes, decreased albumin and increased gamma globulin. Conducted detailed radiological studies allow to determine the stage of the disease [2,3,4]. If necessary, a biopsy is performed. Due to the similarity with other diseases, it is necessary to differentiate between other disease entities [5,6,7].

The specific causative agent of sarcoidosis is yet unknown. There was no effect of bacteria, mycobacteria and viruses on the development of the disease. Previous studies also showed no expression of the disease as the interaction of a particular gene with specific environmental factors. It is believed that this disease is a manifestation of the immune response - in people predisposed to external factors as well as the result of complex interactions between multiple genes and antigens.

Mostly adults - more often women than men, the most common aged 20 - 30 years suffer from sarcoidosis [2,3]. Statistics show that the incidence of the disease varies from 10.9 / 100 000 in Caucasians - to 35/100 000 residents in Blacks. However, there is great diversity and so, for example in Poland and France incidence rate is 10/100 000, in the UK 20, and in Germany 42 [4,8].

Types of sarcoidosis can be very diverse. Sarcoidosis lung and thoracic lymph nodes - the most common form of the disease, causes changes in the lung and lymph nodes, lung cavities. The result is a dry cough, shortness of breath, chest pain and deterioration of exercise tolerance. In advanced stages can develop lung failure and so called pulmonary heart. Changes may also affect the skin, which is observed in approximately 20 - 35% of patients and is often the first symptom of the disease [3,4,9,10,11,12]. Sarcoidosis can also affect the peripheral lymph nodes, upper respiratory tract, abdominal cavity, heart, gastrointestinal tract,

the organ of vision, liver, spleen, kidneys, joints, skeletal system, muscular, [1,3,4,9,13,14,15, 16,17,18,19,20]. In any case, the disease may be very different, and its symptoms can lead to significant functional impairment, both the organ, system, or the whole body. Important are: the severity of the disease course (acute, subacute, chronic), which organ was occupied by the disease, the effectiveness of treatment, gender, age and race.

People with sarcoidosis must undergo specialist treatment and be under constant medical supervision, regardless of their current well-being [4,5,6,21,22,23,24]. Pharmacological treatment is based on the use of steroids (cortisone, prednisone, prednisolone), reducing inflammation, slowing down or stopping damage to organs. Side effects of therapy can be weight gain, prone to osteoporosis, diabetes, hypertension, cataracts, glaucoma, difficulty in sleeping, acne [1,5,6,24].

Aim of the study

The occurrence of the disease and side effects of treatment may cause limitations in functioning. The consequence is a decrease in the overall level of physical activity. This problem has not been studied. Therefore, determining the level of physical activity of patients with sarcoidosis and its relationship with health self-assessment were the subject of this research.

Materials and methods

70 people were examined: 47 women {F} (67.1%) and 23 men {M} (32.9%) aged 22 - 57 years. Selection of the group for the research was purposeful - these people were diagnosed with sarcoidosis. The technique of research was a diagnostic survey in an anonymous questionnaire. Data were collected on gender, age, body weight, length of diagnosed disease, its type and severity. Patients were also asked about the frequency of control medical visits and if there was a weight gain as a result of treatment. Physical activity was assessed on the basis of Baecke's questionnaire - SEWL (subjective experience of work load) [25,26,27]. Quality of life related to health (self-assessment of health) was evaluated using the SF-36 [28]. Physical activity questionnaire used in research classifies activity based on the responses to closed questions, scored on a scale of 1 - 5, in three areas of activity: work - work index (WI), sports (SI) and leisure - without sports (LI). The sum of these three areas of activity allows to estimate habitual, the total activity of a subject: Habitual Physical Activity - HPA [25].

SF-36 is recognized as a widely used tool for the estimation of health self-assessment. Answers to closed questions allow you to assess the health of the eight factors, four of which: physical Functioning (PF), role limitations due a physical health (rph), pain (p), general health (gh) make up the Physical Component (PC), another four: role limitations due this emotional problems (rep), energy / fatigue (e / f), emotional well-being (EWB), Social Functioning (sF) - on the Mental Component (MC). Answers to questions are scored on a scale of 0 to 100 - in ascending order. The higher the average points of the given factor - the better self-care. Both the PC and MC is the average of the component factors [27,28].

Statistical analysis

Descriptive statistics were performed: mean \pm SD, compilation of figures and percentages. The differences between variables was assessed using ANOVA Kruskall-Wallis. Relationships between variables were calculated using Spearman's correlations. The level of statistical significance: p <0.05.

Results

Descriptive statistics of age and morphological parameters of studied are presented in Table 1.

Table 1. Descriptive statistics of age, BMI and length of illness

Parameter	Females	Males
	(mean \pm SD)	(mean \pm SD)
Age {years}	38,53 \pm 9,26	40,21 \pm 9,40
BMI	25,68 \pm 4,40	27,42 \pm 3,47
Length of illness {months}	59,62 \pm 54,86	62,91 \pm 54,42

Data on disease of respondents are shown in Table 2.

Table 2. Variables for the diseases

Sex	Type od sarcoidosis				Stage			Frequency of medical control			Change of life style
	lung	skin	eyes	liver	I	II	III	½ year	1 year	2 years	
F n	46	6	3	1	2	35	10	27	13	7	44
%	97,9	12,8	6,4	2,1	4,3	74,4	21,3	57,4	27,7	14,9	93,6
M n	23	3	1	1	5	14	4	10	10	3	20
%	100	13,0	4,4	4,4	21,7	60,9	17,3	43,5	43,5	13,0	87,0

Symptoms of the disease are shown in Table 3.

Table 3. Symptoms of the disease among the respondents

Symptom	females		males	
	n	%	n	%
Erythema	31	66	7	30,4
Joint pain	37	78,7	13	56,5
Swelling of feet	33	70,2	9	39,1
Rigidity	21	44,7	4	17,4
Increased temperature	31	66,0	10	43,5
Shortness of breath	22	46,8	10	43,5
Cough	21	44,7	8	34,8
Decrease in weight	11	23,4	2	8,7
Sweating	2	4,3	5	21,7
Sticking in chest	5	10,6	1	4,4
Fatigue	4	8,5	1	4,4
Other symptoms	8	17,0	6	26,1

The next step of the analysis is the performance of descriptive statistics of physical activity and calculation of correlation indicators with age, length of disease and BMI. The results are presented in Table 4.

Table 4. Physical activity of respondents and correlations with age, lenght of illness and BMI

Activity index	sex	Respondents overall (mean ± SD)	Stage of disease (mean)			Age: (r -)	Length of illness: (r -)	BMI: (r -)
			I	II	III			
WI	F	2,79 ± 0,70	2,69	2,86	2,56	0,162	0,089	-0,067
	M	2,80 ± 0,71	2,33	2,76	3,53	-0,002	-0,361	-0,236
SI	F	2,41 ± 1,06	3,01	2,41	2,61	-0,218	-0,181	-0,088
	M	2,32 ± 1,04	2,03	2,44	2,17	0,446*	0,089	0,146
LI	F	2,87 ± 0,64	2,63	2,84	3,19	-0,066	0,001	0,154
	M	2,71 ± 0,61	2,90	2,59	2,50	-0,133	-0,107	-0,077
HPA	F	8,08 ± 1,45	8,33	8,11	8,36	-0,172	-0,095	-0,022
	M	7,83 ± 1,56	7,26	7,79	8,58	0,221	-0,138	-0,022

* p<0,05

The analysis showed no differentiation of activity indicators - due to the severity of the disease in women. Among men differences was reported only for WI: p = 0.0482. A similar analysis was performed for the factors and component of health. The results are shown in Table 5.

Table 5. Health self-assessment of subjects and correlations with age, lenght of illness and BMI

Health components and factors	Sex	Respondents overall (mean ± SD)	Stage of disease (mean)			Age: (r -)	BMI: (r -)	Lenght of illness: (r -)
			I	II	III			
PC	F	58,25 ± 21,44	59,48	62,36	45,73	-0,224	-0,163	0,065
	M	70,61 ± 17,19	86,00	67,72	55,49	- 0,420*	-0,140	-0,034
pf	F	72,23 ± 19,53	55,00	76,57	61,25	- 0,327*	-0,078	0,091
	M	83,70 ± 17,20	94,00	79,64	81,66	-0,287	0,097	-0,103
rph	F	64,63 ± 41,07	62,50	73,93	37,50	-0,258	-0,178	0,046
	M	78,26 ± 36,39	100,00	75,00	50,00	-0,273	-0,218	0,057
p	F	55,96 ± 25,13	66,25	57,00	51,88	-0,016	-0,194	0,125
	M	71,20 ± 24,90	87,50	70,71	50,00	-0,302	0,056	-0,116
gh	F	40,18 ± 17,94	54,17	41,93	32,29	-0,175	-0,103	-0,078
	M	49,28 ± 18,53	62,50	45,54	40,28	- 0,462*	-0,264	-0,204
MC	F	62,66 ± 21,28	57,85	67,42	46,11	-0,214	-0,048	0,160
	M	72,70 ± 18,40	84,50	69,43	60,68	-0,342	-0,151	0,051
rep	F	72,70 ± 38,92	66,66	80,48	45,83	-0,132	-0,000	0,242
	M	82,61 ± 36,05	100,00	80,95	55,55	-0,305	0,013	0,123
e/f	F	47,13 ± 18,93	55,00	50,14	33,75	-0,094	0,025	0,140
	M	55,43 ± 19,30	65,00	50,71	50,00	-0,170	-0,103	0,099
ewb	F	60,77 ± 18,21	56,00	64,23	53,00	-0,226	-0,007	0,107
	M	66,78 ± 19,31	80,00	60,00	68,00	-0,284 0,494*	- -0,092	-0,086
* p<0,05								

Among woman, the disease severity differentiated the tested group in factor rep: p = 0.0474. In men, the differences were reported only in the PC: p = 0.0395.

Discussion

The analysis of the data confirms the typical features of this disease. This applies to both the age of incidence (Table. 1), the most common form, symptoms and disease-related behaviors (Table. 2, Table 3). Particularly symptomatic is a fact that lifestyle changes in most subjects. Frequency of control medical visits is associated with the current state of the patients.

Among the respondents were people in the stages of the disease 1, 2 and 3. Despite many symptoms of sarcoidosis respondents took an active part in working life, as indicated by the highest average WI. However, treating the respondents as the group, rather not too high level of physical activity can be noted. It is certainly symptomatic of the dominant contemporary sedentary lifestyle. A lack of correlation with disease duration and activity ratios (Table. 4) suggests that the disease may affect activity rather while worsening of symptoms.

It is worth noting the relatively high value of the SD, indicating the high variability of individual activity.

The exercise intolerance is the problem in sarcoidosis. This may be associated with the occurrence of a decrease in inspiratory muscle strength, and this in turn is an important factor causing shortness of breath and a decrease in the ability to walk. Research on this topic has been conducted in Germany [29]. The skeletal muscle weakness in patients suffering from sarcoidosis was described in other studies. Respondents complained of fatigue, and what is associated with it - the reduction of health and exercise intolerance [30,31]. Analyzing the presented study, the low average AI are noticeable - at the largest standard deviations. This confirmed to some extent the research cited before.

Quality of life related to health (self-assessment of health) is a complex concept. It specifies the current well-being, but can also predict the occurrence of health problems in the future. The quality of life and health in sick people, and consequently, also physical activity are the most disadvantaged. Especially in those patients who have clinical symptoms [32,33,34]. It is also noticeable in the present study, particularly refers to an agent: gh - where the average was definitely the lowest, regardless of gender. As in the case of physical activity, there were no correlation between duration of the disease and the components and self-assessment factors of health. SD value, however, seems to confirm the high variability of individual, probably associated with the severity and type of symptoms.

The data of the study also point to the challenges faced by therapeutic teams. How to motivate people with sarcoidosis for more physical activity - as an important factor of complex treatment of patients. Primary and secondary prevention is particularly important when you customize the most favorable types of therapy. The overriding task for the patient and the treating team is the maintenance of activity of affected organs and prevention of complications in others. The issue of activating people is a complex problem, it is necessary to take into account the current lifestyle and individual preferences, age, clinical symptoms and disease severity, co-morbid conditions. Do not forget about overcoming mental barriers to physical activity [44,45].

Conclusions

1. The most common symptoms of the disease among the respondents are: swelling of the feet, rash, shortness of breath and increased body temperature.
2. Most of the respondents modified their lifestyle under the influence of the disease.
3. Patients with sarcoidosis have relatively low levels of physical activity and reduced self-assessment of health.

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