Benefits of physical training in patients with sarcoidosis

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Introduction

Sarcoidosis patients often present with non-specific symptoms, such as reduced exercise capacity, general weakness and fatigue.[1-3] In addition to the specific organ-related symptoms, these less specific disabling symptoms may have a major influence on daily, social, and professional activities of patients, resulting in a reduced quality of life (QOL). Fatigue may be explained by peripheral muscle weakness and exercise intolerance, each influenced by multiple factors, including sarcoidosis-related skeletal muscle abnormalities, decreased pulmonary function, small fiber neuropathy and deconditioning.[1]
In several chronic diseases, including lung disease, physical training has been shown to improve exercise intolerance and peripheral muscle weakness.[4,5] Limited data in sarcoidosis suggest that physical training is a safe intervention and that improves symptoms, physical functioning and quality of life.[6,7]

The aim of this study was to establish whether a physical training program improves these and other outcomes important to sarcoidosis patients.

Methods

Design: retrospective observational study with 147 patients with evaluable data.
From 11/2012 to 9/2014, 201 sarcoidosis patients were referred to the ild care expertise team, Ede, The Netherlands (Figure 1). In our center all patients are routinely recommended to undergo testing at baseline to determine their physical functioning and encouraged to complete a 12-week, supervised physical training program. Ninety patients underwent baseline testing and returned for repeat testing at three months-in the interim, 49 completed the training program (Group I) and 41 chose not to participate (Group II). Physical functioning: exercise capacity (6-minute walk test, Steep Ramp Test), muscle strength (hand grip strength, elbow flexor muscle force), fatigue (Fatigue Assessment Scale). Change over time (from baseline to 3 months) in fatigue, exercise capacity, and skeletal muscle strength were assessed between the two groups.

Table 1. Summary of demographic and clinical features of the sarcoidosis outpatients (n=201) referred to the ild care expertise team: Group I: followed a supervised physical training program; Group II: no training

		no physical performance assessment	baseline physical performance assessment	Group I	Group II	Total population
Demographics:	subjects, n	54	57	49	41	201
	females, %	42.6	43.9	42.9	24,4	39.3
	age, yrs	48.9±11.3	45.5±11.3	47.6±11.3	49.2±10.5	47.7±11.2
	time since diagnosis, yrs	4.7±6.5	6.3±7.9	5.8±7.0	5.4±5.5	5.5±6.9
	BMI, kg/m^2	27.0±5.8	25.9±4.1	27.5±4.4	27.9±5.3	27.0±4.9
Treatment:	no treatment, n	17 (31.5%)	23 (40.4%)	12 (24.5%)	13 (31.7%)	65 (32.3)
	glucocorticoids, n	23 (42.6%)	18 (31.6%)	21 (42.9%)	15 (36.6%)	77 (38.3)
	other, n	14 (25.9)	16 (28.0%)	16 (32.7%)	13 (31.7%)	59 (29.4%)
Lung function tests:	DLCO, % pred.	76.8±17.4	82.2±16.4	78.8±18.2	77.9±18.9	79.1±17.7
	FEV_1, % pred.	91.5±19.5	92.5±17.4	85.3±18.4	85.7±21.8	88.9±19.4
	FVC, % pred.	98.3±17.4	99.5±17.5	91.2±16.8	94.8±18.0	96.0±17.6
Chest X-ray stages:	0/I/II/III/IV	6/18/24/4/2	7/17/23/6/4	4/11/22/0/4	2/10/21/3/5	19/56/90/13/23
Inflammation marker:	CRP (mg/l)	11.6±39.4	5.3±10.1	5.6±7.7	4.6±4.0	6.7±20.3
	sIL-2R (U/ml)	5894±3688	5126±2723	5514±3595	6467±11807	5705±6176
Fatigue measure:	FAS	29.0±7.8	30.3±9.7	29.8±8.1	30.2±9.0	29.8±8.6

Results

Patients characteristics are summarized in Table 1.
At baseline, there were no between-group differences for fatigue, DLCO%, FVC%, or exercise capacity (assessed by percent predicted 6-minute walk distance [6MWD%] and Steep Ramp Test [SRT]). The 6MWD for Group I improved between baseline and three months, while the 6MWD remained the same in Group II ($F=72.2$, $p<0.001$) (Figure 2 a and b). Group I showed a significantly larger decrease of fatigue compared with Group II ($F=6.27$, $p=0.014$; figure 3). Lung function tests did not change in either group.

Figure 1

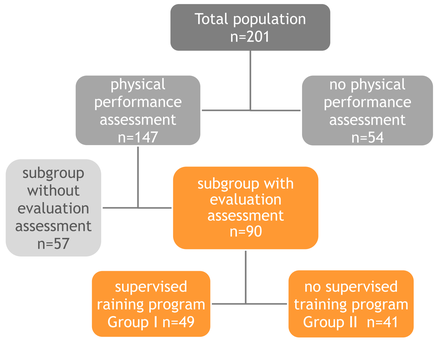

Figure 2

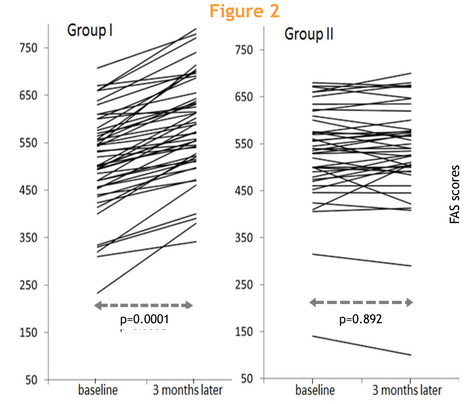

Figure 3

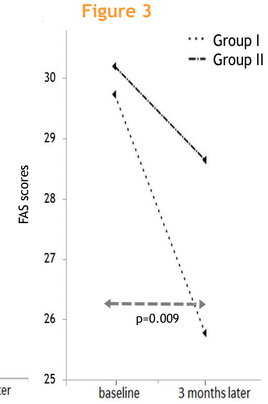

Figure 1. During the study period data of 201 out patients suffering from sarcoidosis were collected. At baseline, the majority of these patients (n=147) completed a physical assessment and surveys at the department of physical therapy. These patients received a tailored advice and were encouraged to start a 12-weeks physical training program supervised by a physical therapist in accordance with their physical performance assessed at baseline. In 90 patients a second physical assessment after a 3 month period follow up was achieved. Between-group evaluation of patients who completed a supervised physical training (n=49) and those who decided not to follow a physical training program (n=41)

Figure 2. Change of the six minute walking distance (meters) between baseline and after three months follow-up: Group I: followed a supervised physical training program; Group II: no training

Figure 3. Mean Fatigue assessment scale (FAS) scores of Group I who did not trained and Group II consisting of sarcoidosis patients who followed a supervised physical training program

Conclusions

A supervised physical training program improves exercise capacity and fatigue among sarcoidosis patients and should be included in their management regimen.
In fact, we would argue that pulmonary rehabilitation should be considered as a first-line therapy for patients suffering from sarcoidosis.[8]

References

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