



# Analysis of 31 Cases of Female Sjogren's Syndrome Patients with Changes in Muscle Mass

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## Abstract

**Objective:** To observe and analyze the changes in muscle mass in patients with Sjogren's syndrome and sarcopenia. **Methods:** From October 2016 to December 2018, the muscle mass of 31 female patients with Sjogren's syndrome who underwent DXA testing in Linyi City People's Hospital was tested, and the changes in muscle mass of patients with Sjogren's syndrome were investigated. **Results:** The incidence of decreased skeletal muscle mass in patients with Sjogren's syndrome was lower. The upper and lower limbs of patients with decreased skeletal muscle mass were significantly lower than those with normal skeletal muscle mass ( $P < 0.01$ ). **Conclusion:** Patients with Sjogren's syndrome will be accompanied by the loss of skeletal muscle mass. This damage can cause the patient's exercise capacity to be limited, so adequate attention should be paid clinically.

## Subject Areas

Rheumatology

## Keywords

Sjogren's Syndrome, Sarcopenia, Muscle

## 1. Introduction

Sarcopenia is considered to be an elderly syndrome characterized by the loss of muscle mass and muscle function in the elderly, especially those over 65 years of age. It causes physiological skeletal muscle mass and ability decline with increasing age. Rheumatic immune system diseases will also accompany the occurrence of sarcopenia. The current research believes that the occurrence of sar-

copenia is not common in patients with rheumatoid arthritis, with a prevalence of 5.6% - 7.8%. Similarly, sarcopenia is in systemic erythema. The prevalence of lupus patients is only 6.5% [1] [2]. At present, most of the researches are mainly about sarcopenia of the elderly, and there are relatively few researches about sarcopenia patients with rheumatic immune system diseases. In this study, the muscle mass of 31 female patients with Sjogren's syndrome who underwent DXA testing at Linyi People's Hospital from October 2016 to December 2018 was reviewed to investigate the changes in muscle mass of patients with Sjogren's syndrome.

### 1.1. Research Objects

31 patients with Sjogren's syndrome who underwent DXA testing at Linyi People's Hospital from October 2016 to December 2018 were selected as the observation group, and 92 healthy women with physical examination during the same time period were selected as the control group. The average age of the observation group was  $50.76 \pm 14.43$  years old, and the average age of the control group was  $50.29 \pm 16.34$  years old. There was no significant difference in age between the two groups ( $P > 0.05$ ).

Diagnostic criteria for decreased skeletal muscle mass (AWGS, 2019) [3]: Dual-energy X-ray absorption measurement calculation of extremities (SMI) = skeletal muscle mass of extremities/height<sup>2</sup>: Females less than 5.40 kg/m<sup>2</sup>.

Inclusion criteria: 1) Patients who were clinically diagnosed as Sjogren's syndrome; 2) Patients who were clinically diagnosed as skeletal muscle mass reduction;

Exclusion criteria: 1) Patients with other diseases; 2) Persons younger than 20 years old.

This research has passed the hospital ethics review, and all subjects voluntarily participate in this research.

### 1.2. Measurement Method

Use the Lunar dual-energy X-ray bone densitometer (DXA) from GE Company to measure the body muscle mass. After removing the metal objects worn by all patients, they lie supine on the measuring bed at room temperature and rest, and measure the muscle mass of the whole body according to the DXA procedure.

### 1.3. Statistical Processing

Using SPSS22.0 statistical software, measurement data is represented by  $\bar{x} \pm s$ , comparison between groups is by  $t$  test, and comparison of count data between groups is by  $\chi^2$  test.

## 2. Results

### 2.1. Detection Status of Patients with Reduced Skeletal Muscle Mass in the Two Groups

Comparison of the incidence of decreased muscle mass between the two groups

had no difference, 7 patients with sarcopenia were detected in the observation group, with a detection rate of 22.6%, and 19 patients with sarcopenia were detected in the control group, with a detection rate of 20.7%,  $\chi^2 = 0.05$ ,  $P = 0.82$ , there was no significant difference in the detection rate of skeletal muscle mass reduction between the two groups (Table 1).

## 2.2. Comparison of Muscle Mass between the Two Groups

There were significant differences in upper limbs ( $P = 0.008$ ), lower limbs ( $P < 0.001$ ) and SMI ( $P < 0.001$ ) between the normal muscle mass group and the reduced muscle mass group (see Table 2). There was no statistical difference between the two groups in BMI, body muscle mass, etc.

## 3. Discussion

Sjogren's syndrome is accompanied by muscle lesions. Studies have shown that patients may have symptoms such as myalgia and muscle weakness [4], muscle tissue atrophy, necrosis, vasculitis and monocyte infiltration [5]. Studies have found that nerve damage and neuromuscular junction destruction are necessary factors for permanent muscle function loss in aging animals [6] [7] [8], and patients with Sjogren's syndrome will develop severe peripheral nerve dysfunction, including distal sensory neuropathy and distal sensory Motor peripheral neuropathy and simple sensory neuropathy syndrome, and there will also be a significant decrease in the number of peripheral nerve myelin fibers [5] [9]. Therefore, neuropathy may not only be the pathological mechanism of senile sarcopenia, but also cause Causes of muscle loss and low muscle strength in patients with Sjogren's syndrome.

Although there is no research on the relationship between Sjogren's syndrome and sarcopenia, studies on rheumatoid arthritis have shown that inflammatory activity may have a greater impact on changes in muscle mass, leading to the

**Table 1.** Comparison of the detection rate of skeletal muscle mass reduction between the two groups.

	Cases	Decreased muscle mass	Normal muscle mass	The detection rate (%)
Observation group	31	7	24	22.6
Control group	92	19	73	20.7
total	123	26	97	

$\chi^2 = 0.05$ ,  $P = 0.82$ .

**Table 2.** Comparison of normal muscle mass group and reduced group in patients with Sjogren's syndrome.

	BMI (Kg/cm <sup>2</sup> )	SMI (Kg/cm <sup>2</sup> )	Up limbs muscle mass (Kg)	Lower limbs muscle mass (Kg)	Body muscle mass (Kg)
Normal muscle mass	24.23 ± 3.20	6.00 ± 0.56	3.86 ± 1.01	11.34 ± 1.59	35.04 ± 7.55
Decreased muscle mass	21.85 ± 4.43	4.56 ± 0.71	2.66 ± 0.80	8.77 ± 1.04	31.02 ± 3.39
<i>t</i>	1.59	5.64	2.86	4.02	1.36
<i>P</i>	0.12	<0.001	0.008	<0.001	0.186

occurrence of secondary sarcopenia. Usually called rheumatoid cachexia, excess inflammatory factors such as IL-1 $\beta$  and TNF- $\alpha$  are considered to be the main features of RC [10]. Little [11] *et al.* found that the weight gain of the arthritis group was significantly reduced, and the muscle mass was significantly lower than that of the healthy control group, accompanied by the increase of myonucleus. Studies have shown that TNF- $\alpha$  in patients with Sjogren's syndrome will also increase significantly [12], and TNF- $\alpha$  plays an important role in the occurrence of sarcopenia. TNF- $\alpha$  has a pro-decomposition effect on skeletal muscle. Studies have found that TNF- $\alpha$  can affect protein expression by inhibiting LPL activity, and can aggravate protein degradation in muscles and promote muscle decomposition [13]. Patients with Sjogren's syndrome will also increase IL-1 $\beta$  [14]. Arthritis animal studies have shown that CRP and IL-1 $\beta$  related to sarcopenia are significantly higher than those in the control group. IL-1 $\beta$  can stimulate NF- $\kappa$ B and p38 MAPK Signal-induced increases in the expression of atrogen-1 and MuRF-1 lead to trigger proteolysis, myotube atrophy and muscle loss; arthritis group is also accompanied by increased levels of MyoD and myogenin, high levels of MyoD promote satellite cell proliferation and muscle cells The increase in poietin promotes differentiation of myoblasts and muscle regeneration; CCL-2, which has a muscle repair effect, also decreases in the arthritis group [11]. Therefore, elevated levels of pro-inflammatory factors may also be one of the reasons for sarcopenia in patients with Sjogren's syndrome.

#### 4. Conclusion

In short, our research shows that patients with Sjogren's syndrome will experience loss of skeletal muscle mass, which is mainly concentrated in the loss of limbs. Therefore, clinical examination of the skeletal muscle level of patients with Sjogren's syndrome should be given some attention.

#### Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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