Clinical Neurology and Neurosurgery 182 (2019) 84–86

Contents lists available at ScienceDirect

Clinical Neurology and Neurosurgery

journal homepage: www.elsevier.com/locate/clineuro

Case Report

Chronic sarcoid myopathy mimicking sporadic inclusion body myositis

Masayuki Miyazaki[a], Madoka Mori-Yoshimura[a,*], Toshiyuki Yamamoto[a], Yasushi Oya[a], Yuko Saito[b], Ichizo Nishino[c,d], Yuji Takahashi[a]

[a] Department of Neurology, National Center Hospital, National Center of Neurology and Psychiatry, Japan
[b] Department of Laboratory Medicine, National Center Hospital, National Center of Neurology and Psychiatry, Japan
[c] Department of Neuromuscular Research, National Institute of Health, National Center of Neurology and Psychiatry, Japan
[d] Medical Genome Center, National Center of Neurology and Psychiatry, Japan

ARTICLE INFO

Keywords:
Chronic sarcoid myopathy
Sporadic inclusion body myositis
Finger flexor weakness
Muscle selectivity on imaging
Dysphagia

ABSTRACT

The patient was an 81-year-old woman. At age 73, she developed difficulties in climbing stairs and swallowing, and became unable to open bottles at age 74. She had been walking with a cane since age 76. Accidental chest X-ray findings showed bilateral hilar lymphadenopathy at age 78. Angiotensin converting enzyme (ACE) was elevated. Lymphocyte proliferation was prominent in bronchoalveolar lavage fluid. Sarcoidosis was suspected, but she was followed without treatment due to lack of respiratory symptoms. She became unable to walk without assistance at age 80 and visited our hospital with a complaint of gait disturbance at age 81. Moderate diffuse muscle atrophy in extremities was evident. Muscle weakness of finger flexion and knee extension were remarkable. The muscle involvement pattern was similar to sporadic inclusion body myositis (sIBM). However, radiographically, rectus femoris and semitendinosus muscles are selectively preserved. This radiogaphic finding was consistent with chronic sarcoid myopathy (CSM). We reached a final diagnosis of CSM based on the presence of granulomas in the muscle biopsy specimen, BHL in fluorodeoxyglucose positron-emission tomography, the previous finding of elevated ACE, and bronchoscopy results. In conclusion, CSM is a treatable disease and should thus be differentiated from sIBM. This should not be done solely based on clinical findings, but instead, muscle biopsy should be performed. Moreover, muscle selectivity may be useful in distinguishing between CSM and sIBM.

1. Introduction

Chronic sarcoid myopathy (CSM) is a rare form of sarcoidosis exhibiting symptomatic muscle involvement. A previous report suggested the effectiveness of immunomodulatory therapy in preventing the progression of CSM [1]. Sporadic inclusion body myositis (sIBM) is an inflammatory muscle disorder without a definitive treatment. This condition is known to selectively impair long finger flexors and quadriceps [2]. While muscle involvement patterns of CSM normally differ from those of sIBM, we encountered a patient with CSM showing the characteristic features of sIBM.

2. Case report

The patient was an 81-year-old woman with previous history of hypertension, appendicitis, and fibroid. Her developmental history was unremarkable. At age 73, she developed difficulties in climbing stairs and swallowing, and became unable to dorsiflex her left wrist (e.g., to open bottles) at age 74. She had been walking with a cane since age 76. Accidental chest X-ray findings showed bilateral hilar lymphadenopathy (BHL) at age 78. Her angiotensin converting enzyme (ACE) and soluble interleukin 2 receptor (sIL-2R) levels were elevated. Lymphocyte proliferation was prominent, with a CD4/CD8 ratio of 7.8 (normal range: ≤3.5), in bronchoalveolar lavage fluid. Sarcoidosis was suspected, but she was followed without treatment due to lack of respiratory symptoms. She became unable to walk without assistance at age 80 and visited our hospital with a complaint of gait disturbance at age 81.

On physical examination, moderate diffuse muscle atrophy in extremities was evident. At the thigh level, quadriceps atrophy was more prominent than in the hamstrings. The Medical Research Council (MRC) scale parameter were as follows: arm abduction (right/left) of 2/2; elbow flexion of 3/3; wrist flexion and extension of 3/2 and 3/2, respectively; hip flexion, extension, adduction, and abduction of 3/3, 1/1, 1/1, and 2/2,respectively; knee flexion and extension of 3/3 and 3/3, respectively; and ankle dorsiflexion and plantarflexion of 2/1 and 2/2,

* Corresponding author.
E-mail address: yoshimur@ncnp.go.jp (M. Mori-Yoshimura).

https://doi.org/10.1016/j.clineuro.2019.05.001
Received 3 January 2019; Received in revised form 30 April 2019; Accepted 4 May 2019
Available online 06 May 2019
0303-8467/

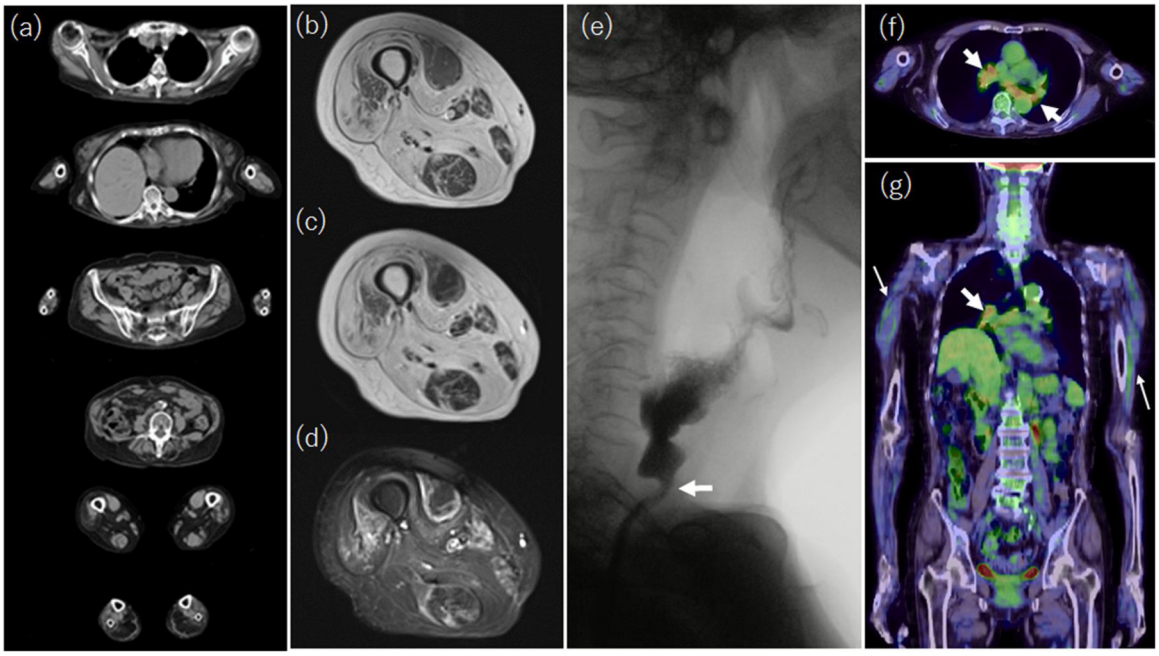

Fig. 1. Radiographic findings including muscle CT, MRI, FDG-PET, and VF.
Muscle CT showed diffuse atrophy in the upper extremities and paraspinal muscles. Lower extremity muscles were severely impaired, whereas the rectus femoris, adductor longus, sartorius, gracilis, semitendinosus, and ankle dorsi flexor muscles were relatively preserved. Bilateral forearm muscle atrophy was also observed (a). T1WI and T2WI of thigh MRI showed fatty replacement of atrophic muscles, while the rectus femoris and semitendinosus muscles were relatively preserved (b, c). The margin of the rectus femoris, semitendinosus muscles, and other preserved muscles showed high signal in STIR of thigh MRI (d). Visible cricopharyngeal bar (e, arrow) was noted in VF (e). FDG-PET showed increased uptake in bilateral hilar, mediastinal lymph nodes (fat arrow), and preserved muscle (thin arrow) (f, g).

respectively. She could not flex her fingers (MRC 1) other than her bilateral thumbs (MRC 2). She was able to extend her bilateral little fingers and slightly extend her right index finger as well as her left ring finger, but not other fingers. Her reflexes were absent.

Serum creatine kinase, aldolase, ACE, and lysozyme were normal, but sIL-2R was mildly elevated to 620 U/ml (normal range: 145–519 U/ml). The antinuclear antibody, anti-DNA antibody, anti SS-A antibody, anti SS-B antibody, anti-RNP antibody, anti-SCL70 antibody, anti-mitochondrial antibody, anti-cyclic citrullinated peptides antibody, anti-aminoacyl-tRNA synthetase antibody, anti-mitochondrial M2 antibody, and anti-cytosolic 5'-nucleotidase 1A antibody were all negative. In skeletal muscle CT images, the rectus femoris, semitendinosus, and ankle dorsi flexor muscles were relatively preserved, but other skeletal muscles including forearm muscles were diffusely atrophied (Fig. 1a). In particular, fatty replacement was prominent in the lower limb muscle group. T2-weighted and short T1 inversion recovery MRI showed high signal intensity in the remaining muscles (Fig. 1b–d). A videofluoroscopic examination of swallowing (VF) revealed pharyngeal dilation and visible cricopharyngeal bar (Fig. 1e). Aspiration with additional swallowing with solid matter was observed. Opening of the esophagus entrance was poor and the laryngeal penetration was confirmed. Fluorodeoxyglucose positron-emission tomography (FDG-PET) showed increased uptake in bilateral hilar, mediastinal lymph nodes, and skeletal muscles of the extremities (Fig. 1f, g).

We performed a biopsy of the left rectus femoris. Non-caseating granulomas were observed in some areas, showing a mild variation in fiber size. No apparent necrotic and scattered regenerating fibers were observed. Mild endomysial fibrosis was observed in the granulomatous area. No rimmed vacuoles or COX-negative fibers were found. Muscle fibers were positive for MHC class I and II expression. CD4-positive cells were dominant in the granulomas. A very few fibers had dot-like p62 depositions (Fig. 2).

Although sIBM was indicated as a differential diagnosis from clinical findings, the patient was pathologically diagnosed with CSM. She was administered corticosteroid (1 mg/kg/day) for three days. After treatment, her arm abduction immediately improved from MRC 2/2 to 3/3. We proposed treatment with an oral steroid, but she refused further treatment after considering the risks.

3. Discussion

In the present case, the muscle involvement pattern, significant in finger flexion and knee extension, was similar to that of sIBM. We reached a final diagnosis of CSM based on the presence of granulomas in the muscle biopsy specimen, BHL in FDG PET, the previous finding of elevated ACE, and bronchoscopy results.

Generalized muscle weakness is reportedly observed with disease progression in patients with CSM [1]. Although details on muscle weakness have not been described in previous studies, most CSM patients show predominant weakness in the neck or lower extremity muscles [1]. On the other hand, deep finger flexors and quadriceps are predominantly affected in sIBM [2]. Therefore, muscle involvement patterns of CSM normally differ from those of sIBM. However, there was one case in the study by Maeshima et al. [1] with predominant weakness in the distal upper extremity muscles. Additionally, Laure et al. [2] reported that four cases of suspected sIBM were pathologically identified to have granulomatosis myopathy, including one CSM case without pathological features of sIBM. Their CSM case showed marked atrophy of both quadriceps and weakness of the left ankle dorsiflexor, as well as asymmetrical and selective atrophy of the forearm flexor muscles [2]. Given the clinical similarities between sIBM and sarcoidosis, CSM should be considered a differential diagnosis of sIBM.

Radiographically, patients with CSM present with selective muscle atrophy in the biceps femoris, semimembranosus muscle, adductor magnus, gastrocnemius, and soleus muscles [1]. In sIBM, the flexor digitorum profundus, anterior muscles of the upper leg, and all muscles of the lower leg (preferentially the medial part of the gastrocnemius) are affected [3]. According to this study, rectus femoris is relatively spared compared with other quadriceps muscles, but is prone to be more impaired than posterior muscle group of the upper leg [3].

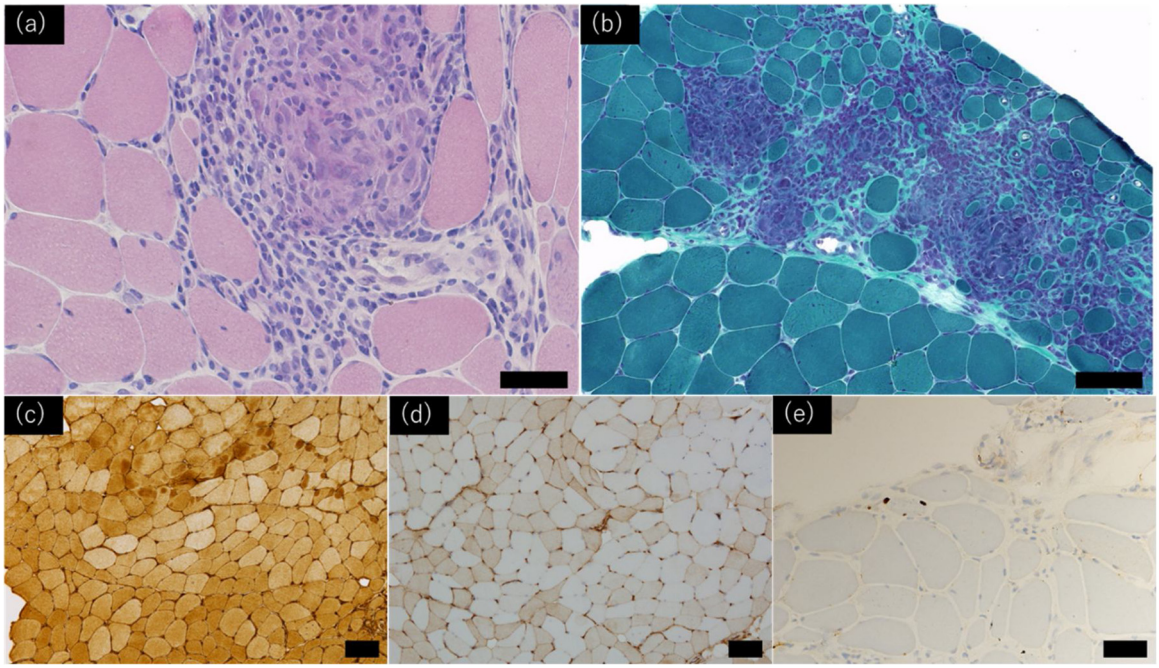

Fig. 2. Pathological findings of muscle biopsy specimens from the left rectus femoris.
Hematoxylin-eosin stained, focal non-caseating granulomas were observed (a). Gomori-trichrome staining showed no rimmed vacuoles (b). Sarcolemmas were diffusely stained in MHC class I (c) and II (d) staining. Dot-like p62 depositions were slightly present (e). Scale bars show 50 μm (a, e) and 100 μm (b–d).

Involvement of the dorsal portion of the lower extremity muscles in CSM contrasts with the predominant involvement of knee extensor muscles reported in sIBM [1]. In our patient, the pattern of muscle involvement on imaging of the lower extremities (i.e., preserved rectus femoris and semitendinosus muscles) was consistent with features of CSM and inconsistent with features of sIBM.

Our patient had dysphagia, and a VF revealed visible cricopharyngeal bar. According to a study by Nishimura et al. [4], cricopharyngeal bar is occasionally observed in patients with myopathy who present with dysphagia. While dysphagia is common in sIBM, it is relatively uncommon in sarcoidosis. Apart from cases of sarcoidosis with cranial nerve IX and X palsies in that study, sarcoidosis accompanied cricopharyngeal muscle dysfunction that causes dysphagia in two cases. These patients were successfully treated by cricopharyngeal myotomy, confirming the histopathological features of CSM.

Muscle biopsy specimens revealed focal non-caseating epithelioid granulomas, which were surrounded by CD3-positive cells, and the majority of these cells were positive for CD4 in CSM. Sarcolemmas were stained diffusely in MHC class I and II staining [1]. In a recent study, granuloma formation was observed in addition to typical pathological features in patients with sIBM [5]. In our case, pathological features of sIBM (e.g., CD8 predominant endomysial infiltrates and rimmed vacuoles) were not observed. Although minimal dot-like p62 depositions were observed, we considered this finding nonspecific, as it was confined only to a small portion of the specimen in the absence of rimmed vacuoles.

4. Conclusion

In conclusion, CSM is a potentially treatable disease and should thus be differentiated from sIBM. This should not be done solely based on clinical findings, but instead, muscle biopsy should be performed in suspicious cases. Moreover, the pattern of muscle involvement on imaging may be useful in distinguishing between CSM and sIBM.

Acknowledgements

We thank Dr. Satoshi Yamashita for the measurement of anti-cytosolic 5'-nucleotidase 1A antibody. This study was supported partly by Intramural Research Grant (29-3/29-4) for Neurological and Psychiatric Disorders of NCNP.

References

[1] S. Maeshima, H. Koike, S. Noda, H. Nakanishi, M. Iijima, M. Ito, S. Kimura, G. Sobue, Clinicopathological features of sarcoidosis manifesting as generalized chronic myopathy, J. Neurol. 262 (2015) 1035–1045.
[2] S. Larue, T. Maisonobe, O. Benveniste, C. Chapelon-Abric, O. Lidove, T. Papo, B. Eymard, O. Dubourg, Distal muscle involvement in granulomatous myositis can mimic inclusion body myositis, J. Neurol. Neurosurg. Psychiatry 82 (2011) 674–677.
[3] F.M. Cox, M. Reijnierse, C.S.P. van Rijswijk, A.R. Wintzen, J.J. Verschuuren, U.A. Badrising, Magnetic resonance imaging of skeletal muscles in sporadic inclusion body myositis, Rheumatology 50 (2011) 1153–1161.
[4] A. Nishimura, R. Ikeguchi, M. Kobayashi, M. Takeuchi, Y. Shimizu, H. Saigusa, K. Kitagawa, Chronic sarcoid myopathy manifesting only as dysphagia and dysarthria in an 84-year-old woman, Clin. Neurol. Neurosurg. 173 (2018) 58–60.
[5] K. Sakai, Y. Ikeda, C. Ishida, Y. Matsumoto, K. Ono, K. Iwasa, M. Yamada, Inclusion body myositis with granuloma formation in muscle tissue, Neuromuscul. Disord. 25 (2015) 706–712.