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Case Report

A Case of Collaborative Practice Rehabilitation in Transverse Myelitis Complicated with Idiopathic Interstitial Pneumonia

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Abstract

Background: Transverse myelitis is movement disorder, sensory disturbance, disease with the bladder rectal disorder by being transverse, and spinal cord being affected. In addition, Aquaporin 4 (AQP4) is antibody-positive and has a poor prognosis, and AQP4 antibody-positive transvers myelitis complicated with idiopathic interstitial pneumonia is rare. Our report concerns a case of AQP4 antibody-positive transvers myelitis complicated with idiopathic interstitial pneumonia improved functional prognosis to perform collaborative practice rehabilitation.

Methods: A 62-year-old woman had a cough and chest pain, and muscle weakness of the left leg was gradually detected. She had a diagnosis of transverse myelitis and idiopathic interstitial pneumonia and started steroid medicine. For muscle weakness, gait disturbance, a decreased respiratory function, physician, physical therapist, occupational therapist, nurse, dietitian, pharmacist, Medical social worker cooperated and started collaborative practice rehabilitation.

Results: Pneumonia, the transverse myelitis were improved at the discharge, and the treatment was effective. Also, by collaborative practice, a motor function and the respiratory function were improved, too. She continued a medical examination, treatment, rehabilitation after a discharge and were able to return to work by continuing support.

Conclusion: Collaborative practice was effective for Idiopathic interstitial pneumonia and transverse myelitis. Also, training initiation time and education for patients for an interview at end and the adjustment of the exercise program, movement instruction and prevention of recurrence were effective. Function recovery was possible by sharing problems with clinical condition.

Keywords: Collaborative practice rehabilitation; Idiopathic interstitial pneumonia; Transverse myelitis

Abbreviations

ADL	:	Activity of daily living
AQP4	:	Aquiaporin4
IPF	:	Idiopathic pulmonary fibrosis
METs	:	Metabolic equivalents
MRI	:	Magnetic resonance image
mMRC	:	Modified British Medical Research Council

Case Report

A 62-year-old woman noticed a cough and exertional dyspnea from one year ago and treated in other hospitals but consulted our hospital without being improved. She felt pain other than exertional dyspnea from both sides to back, the chest, and it was with admission because of difficulty in walking.

She had dyslipidemia in the past and was treated with medication. On admission, the consciousness were lucid, and blood pressure 134/93, pulse 117/min were regular, and there was no rales by respiratory rate 12/min, 36.8 degrees Celsius, $SpO_2$98%(room air), forced exhalation, and heart sound, breath sounds, abdomen were normal. She had profound weakness in the distal muscles of

the left leg. Notably, she had less than antigravity strength in knee flexion, and knee extension and reduced strength ranging 4 on the Medical Research Counsel scale for muscle strength in the left leg and anal sphincter [1]. Also, dysesthesia was detected in a level below Th9. The vibratory sensation, the thermalgia decreased slightness with a left leg. The periosteal reflex was enhanced with bilateral feet moderately, and the pathologic reflex was negative at both sides. The basic movement went over at admission, the rise and locus became independent, but the start and the standing position needed surveillance. Eating and wearing clothes were able to do it by oneself, and support was needed for the movement and the bathing to the restroom. The biochemical examination of blood showed mild blood sedimentation sthenia (67mm), but the others were normal ranges. The autoantibody was negative. Cell count 25/μl, protein 41 mg/dl, sugar 121mEq/L, a null cerebrospinal fluid oligo glow lamp band were with negative results of cerebrospinal fluid. The chest X-rays at admission showed the ground glass shadow around the bronchovascular bundle of both lower lung field (Figure 1-a).

Chest X-rays

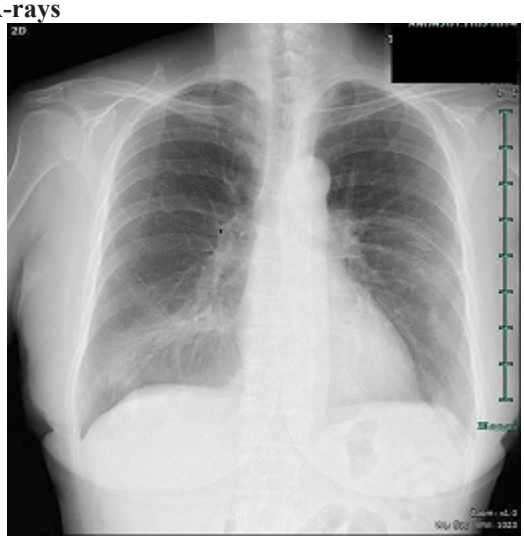

Figure 1-a: On admission chest X-rays: It showed the ground glass shadow around the bronchovascular bundle of both lower lung field.

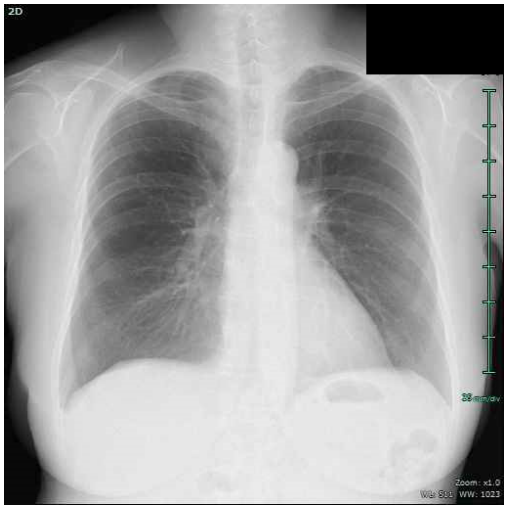

Figure 1-b: The ground glass shadow was improved.

Magnetic Resonance Image (MRI) showed a high signal region heterogeneous intraspinally of Th4-7 level (Figure 2-a). Problems at rehabilitation initiation included Performance Status3, dyspnea of Modified British Medical Research Council (mMRC) 2, a reduction in physical active mass, a decrease of the ADL due to pain of lower extremities, muscle weakness. Therefore, we did the aim with improvement of respiratory function improvement, permanent improvement, muscular strength reinforcement, the sensory disturbance in a rehabilitation short term. Rehabilitation approach was breathing instruction, the respiratory muscle reinforcement exercise for idiopathic organized pneumonia and, for the transverse myelitis, stimulated upper lower limbs exercise reinforcement, ergometer, muscle reeducation, training, the superficial stimulation to the sensory disturbance site, the deep part. We made a support spectrum to perform Activity of Daily Living (ADL) training, education for patients comprehensively (Table1). The treatment started internal use from prednisolone45mg/day, and by 5 mg decreased gradually every two weeks. The respiratory symptom, the lower limbs neurologic symptoms were light tendencies, but affected continuation of the training because paroxysmal pain developed to a left leg from 35 days later after admission. Started Mexiletine100mg/day,

but was called off by stomachache, and changed to pregabalin 50mg/day, but for somnolence versions; strongly discontinued it. Because the pain was not improved with medicine, we controlled the pain by rehabilitation instruction, management. The instruction contents conducted the motion with the loading dose of 2-3Metabolic equivalents (METS) [2], according to pain and fatigue intermittently. Also, we performed the ADL movement instruction after the discharge, breathing, the self-administration. At the discharge, the respiratory function was improved, and the left leg distal muscle, the anal sphincter muscular strength was improved to Medical Research Counsel scale for muscle strength in the left leg3-4. The ADL was possible, but the outdoor walk assumed it silver car use because of paroxysmal pain. She left the hospital in the home on the 71st day since she was admitted. By the chest X-rays four months later, the ground glass shadow was an improvement tendency, and, for the dorsal MRI findings, the intramedullary brightness change reduced it (Figures1-b, 2-b). She continued treatment after a discharge and conducted instruction of the driving and a permanent evaluation, training. The physical active mass was improved to Performance Status 1, mMRC 1 five months later, and the reinstatement in the short time was enabled.

Dorsal MRI

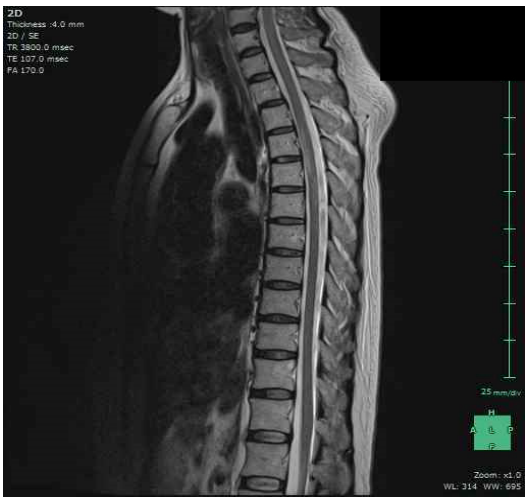

Figure 2-a: Th4-7 level had a heterogeneous high signal region with a T2-weighted image.

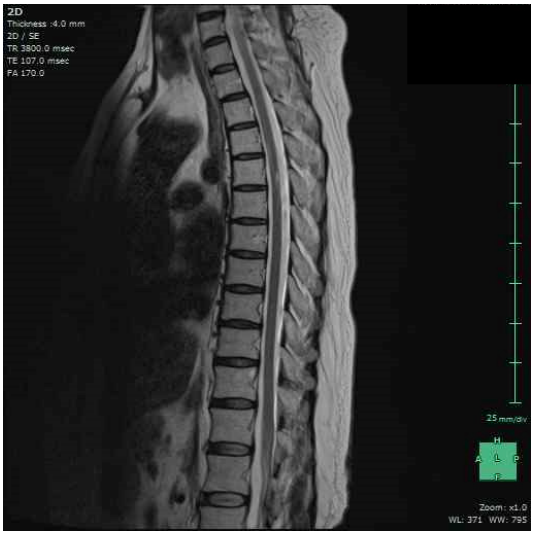

Figure 2-b: The intramedullary brightness change at admission reduced.

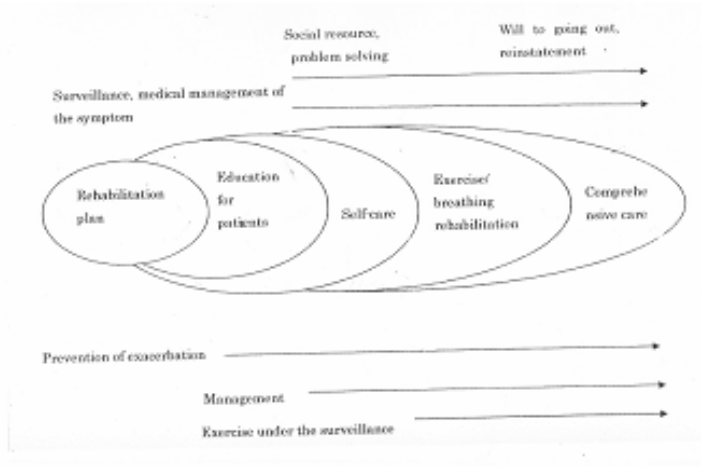

Table 1: Support spectrum.

Discussion

The idiopathic interstitial pneumonias can be subdivided into the following categories: first, definite idiopathic pulmonary

fibrosis (IPF), second, probable IPF with major differential diagnoses of fibrotic nonspecific inter stitial pneumonia and chronic hypersensitivity pneumonitis and third, apparently idiopathic interstitial pneumonias other than IPF[3]. Relatively many complications have pulmonary hypertension [4-7], but there is not the report that idiopathic organized pneumonia developed prior to transverse myelitis. Also, in this case, it was the AQP4 antibody-positive case [8] which was specific for neuromyelitis optica [9], and there was not optic neuritis and the brainstem lesion and was only myelitis. Sato DK [8] reported patients with AQP4 antibody had spinal cord lesion distributed in the lower portion of the spinal cord, and usually demonstrated better functional recovery after an attach· Causes of the neuromyelitis optica included autoimmune disease such as viral infection or collagenosis, vaccination [10-12], but intraalveolar inflammatory findings were with an opportunity for the disorder, and secondary inflammation was thought to amount to spinal cord.

The treatment of the idiopathic interstitial pneumonia is a steroid, and the prognosis is good [13-19]. Whereas the steroid is effective in the neuromyelitis optica [20], but, according to the report of Weinshenker et al. [21], the case of approximately 40% shows a recurrence for the antiAQP4 antibody-positive myelitis for less than one year, and a serum clarification therapy is recommended when a steroid is invalidity. The approach from both was necessary for the disorder for respiratory disorder, neuropathy. We made a rehabilitation support spectrum to conduct comprehensive rehabilitation management and grasped the needs of the rehabilitation intervention from an early stage, self-care instruction and the prevention of recurrence of the loading dose, the patients, the family. We performed breathing and the instruction of the exercise loading dose, little load continuously, and ADL improved it by giving exercise durability quantity. It became the approximately uneventful movement level in ADL after five months and was able to return to work. It was thought to be necessary to continue rehabilitation to minimize functional decline in the long term.

Conclusion

In summary, for transverse myelitis complicated with idiopathic interstitial pneumonia, we described rehabilitation in cooperation with physician, physical therapist, occupational therapist, nurse, medical social worker, and a good treatment outcome was obtained, and the patient was satisfied by sharing problems with condition. Training initiation time and education for patients for an interview at end and the adjustment of the exercise program, movement instruction and prevention of recurrence were effective. We estimate it as patient education, and it will be necessary to plan prevention of recurrence and maintenance, improvement of the motivation. Collaborative practice seemed to be effective so as to be the patients who had difficulty in patients and elderly people with complications, management. It will be necessary to perform collaborative practice for more disease, and to examine a treatment outcome.

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Authors' Contributions

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Conflicts of Interest: None declared.

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