

A Case of Amyotrophic Lateral Sclerosis complicated with Idiopathic Thrombocytopenic Purpura

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Introduction

Amyotrophic lateral sclerosis (ALS) is a neurodegenerative disorder characterized by the progressive death of motor neurons, resulting in fatal paralysis in a few years. ALS was well described by Jean-Martin Charcot in 1869. Since that time, numerous studies have been conducted to characterize the anatomical, physiological, and molecular properties of the disorder [1–4]. Although the cause of ALS remains unknown, accumulated evidence suggests an autoimmune mechanism of pathogenesis. Herein, we report a case of ALS with Idiopathic Thrombocytopenic Purpura (ITP).

Case report

The patient was a 62-year-old man. Muscle weakness of the right upper extremity developed from about March, 2006. Muscle weakness of all four extremities developed subsequently. Dysphagia became remarkable in 2008. He was admitted to the University of Tokushima Hospital on November 17, and a tracheostomy was performed. A respirator was attached to him subsequently. He received a gastric fistula in April, 2009. There was no abnormality except that platelets decreased by $32,000/\mu\text{l}$ in the general blood test. PAIgG rose with $76\text{ ng}/10^7\text{ cells}$ (<46).

Clinical course after hospitalization

PAIgG rose with the decrease of the platelets. The examination of the coagulation system was normal, too. Because a merger of the ITP was considered, Predonin 60mg/day was started on May 3. Because the platelets decreased to $5,000/\mu\text{l}$ on May 6, Methylpredonisolon 500mg/day was given for three days. PSL was tapered subsequently from 60 mg/day. The platelet count gradually increased. Because the patient improved to PLT $74,000/\mu\text{l}$ on June 1, he left the hospital on June 5.

Discussion

Since autoimmune mechanisms have been considered as a pathogenic factor in ALS, several laboratories have started to look for typical signs or hallmarks of autoimmune diseases, such as immunological alterations and associated disorders. The proportion of lymphocyte subsets has been reported to be normal in ALS patients [5]. However, 19% of ALS patients and around 20% of their relatives present with thyroid disease [6]. Furthermore, interesting but controversial observations have been reported. A high frequency of the HLA (human leukocyte antigen) A3 and HLA B12 histocompatibility antigens has been

found in ALS patients with rapid and slow progression, respectively [7], but it has not been detected in other patients [8]. Similarly, an increased incidence of immune complexes in serum and kidney was detected by one laboratory [9] but not by another [8].

In ALS, a systemic inflammatory response has not been reported. However, there is evidence suggesting that neuroinflammation may be a pathological characteristic of this disease [10-13]. An important marker of autoimmunity is the prevalence and extent of T lymphocytic infiltration in the ventral horn of the spinal cord from ALS patients [10]. Using monoclonal antibodies against macrophages T and B cells, the authors revealed that as many as 79% of the specimens showed a cellular mononuclear infiltration. Tissue samples from other ALS subjects with the same duration and clinical signs did not show lymphocytic infiltration, suggesting it is unlikely that such infiltrates appear as a consequence of spinal cord atrophy. The cellular composition of the spinal cord inflammatory infiltrate comprises a suppressor/cytotoxic T-cell subset and macrophages (*in the anterior and lateral corticospinal tracts and anterior horns*) [11]. Similarly, Engelhardt and colleagues [12] observed T-helper cells (*in proximity to the corticospinal tract degeneration*) and T-helper and T-suppressor/cytotoxic cells (*in ventral horns*). Other laboratories have also observed that inflammation in the ALS spinal cord as well as in the cortex is based on macrophages and T cells [13]. Additional evidence pointing towards the involvement of autoimmune processes has been the recent finding of increased levels of interleukins IL-17 and IL-23 in the serum and cerebrospinal fluid of ALS patients. This increment is thought to be a sign of Th-17 activation, a subset of T cells suggested to be crucial in destructive autoimmunity [14].

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