—Case Reports—

Unilateral Vocal Cord Paralysis in a Patient with Anti-Galactocerebroside Antibodies: A Case Report

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Anti-galactocerebroside (Gal-C) antibodies are present in patients with conditions such as Guillain-Barré syndrome and mycoplasma pneumonia. We report a rare case of left vocal cord paralysis in a patient with anti-Gal-C IgG antibodies that improved after administeration of antivirals and steroids.
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Key words: anti-galactocerebroside (Gal-C) antibody, Guillain-Barré syndrome (GBS), vocal cord paralysis

Introduction

The vocal cords can be damaged by factors including trauma, surgery, endotracheal intubation, infection, compressive lesions, and neurologic diseases such as Guillain-Barré syndrome (GBS)[1–3]. However, few patients with unilateral vocal cord paralysis have anti-galactocerebroside (Gal-C) antibodies, even in cases of GBS. We report a rare case of left vocal cord paralysis in a man with anti-Gal-C antibodies, which suggest an immune-mediated mechanism. This study was approved by the Ethics Committee of Toho University Omori Medical Center (date of approval: July 13, 2022).

Case Report

A 69-year-old man with dysphagia and hoarseness 5 days before admission, was prescribed an antibacterial drug but did not improve. Laryngoscopy confirmed left vocal cord paralysis (**Fig. 1**) and he was referred to our department. His past medical history and family history were unremarkable and there were no other abnormal physical or neurological findings. He reported no current smoking, alcohol drinking, or oral medication use. A cerebral fluid examination 10 days after onset revealed 4 mononuclear cells/μL, 63 mg/dL protein, 67 mg/dL glucose, an IgG index of 0.46, and normal myelin basic protein. No oligoclonal band was observed. Swallowing videofluorography revealed retention at the esophageal inlet (**Fig. 2**); however, the findings of all other neurological electrophysiologic findings, including other general and imaging examinations, were normal. In consideration of the possibility of cranial nerve disorder associated with herpes infection, the patient was started on acyclovir (10 mg per kg, three times a day) and steroids (0.5 mg/kg per day), which were later tapered off. On the 16

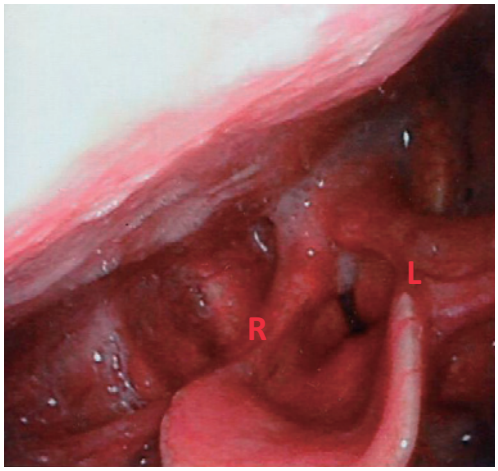

Fig. 1 Laryngoscopic endoscopy shows closure of the left vocal cord.

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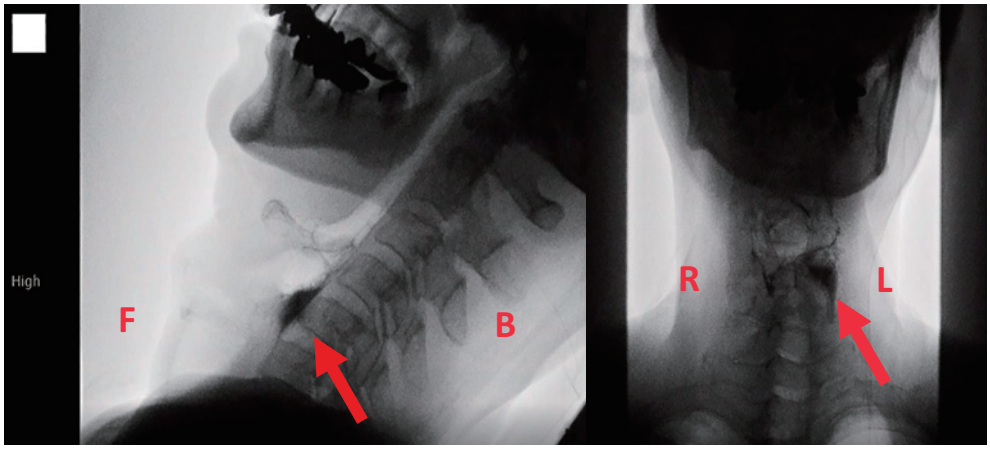

Fig. 2 Swallowing videofluorography shows accumulation at the left esophageal inlet (arrow).

th day after onset of dysphagia, his swallowing was improved and there has been no relapse of dysphagia. Subsequent testing showed a positive response to anti-Gal-C antibody IgG.

Discussion

This study reported a rare case of left vocal cord paralysis in a patient with anti-Gal-C antibodies. Gal-C is a major glycolipid component in cell membranes of myelin, oligodendrocytes, and Schwann cells that form myelin and is thought to be nonspecific in localization and distribution. Anti-Gal-C antibodies attack myelin, causing demyelinating peripheral neuropathy, which can result in sensory disturbance, autonomic neuropathy, and respiratory disorders due to large-diameter cell damage[4–6]. Generally, Gal-C antibodies are elevated in persons with multiple sclerosis, GBS, mycoplasma pneumonia, combined central and peripheral demyelination, and acute disseminated encephalomyelitis[7–10]. Gal-C antibodies can pass through the blood- brain barrier and are likely able to pass through the blood-nerve barrier as well. Therefore, the relatively long left recurrent laryngeal nerve palsy is highly susceptible to damage and specific disorder. There have been few reports of patients with left vocal cord paralysis only, even in patients with GBS and anti-Gal-C antibodies[11]. Our patient had an unremarkable medical history and no electrophysiological or neuroradiological findings of GBS, multiple sclerosis, combined central and peripheral demyelination, or acute disseminated encephalomyelitis. Previous reports suggest that anti-Gal-C antibodies are produced after a mycoplasma infection due to the similarity of the molecular structure of mycoplasma and Gal-C[12]. In our patient, antibacterial drugs were prescribed before hospitalization and thus the possibility of a prior infection cannot be excluded. Although we did not investigate for mycoplasma infection, we speculate that vocal cord paralysis was caused by production of antibodies by strains that have antigens similar to vocal cord tissue. We believe that even if this process is unusual, measurement of anti-glycolipid antibodies may be helpful when patients with a prior infection present with vocal cord paralysis of unknown cause. However, analysis of additional cases is necessary in order to confirm this hypothesis.

Data Availability Statement: All data generated or analyzed during this study are included in this article.

Author Contributions: Masaru Yanagihashi conceived the content, wrote the preliminary version of the manuscript, and reviewed the final manuscript before submission. Ryuichi Okamoto, Ayano Matsuoka, and Harumi Morioka were involved in treatment planning and medical data collection. Akira Fukuo, Kota Wada performed laryngoscopy. Osamu Kano conceived the overall content and edited and approved the final version before submission.

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