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Successful Pulmonary Rehabilitation in Bilateral Medial Medullary Infarction: Two Case reports

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Introduction

Bilateral medial medullary infarction is a very rare occurrence and a constellation of various neurologic manifestations seen in cerebrovascular accidents. The medulla oblongata deals with the autonomic functions, such as breathing, heart rate, and blood pressure. The ventral or dorsal respiratory groups of medulla are neurons involved in the regulation and send electrical signals about blood acidity to intercostal and phrenic muscles to increase their contraction and oxygenation of the blood. Thus, bilateral medullary infarction disrupts respiratory circuits and can cause the acute and chronic respiratory difficulty. These cases describe the patients with the successful pulmonary rehabilitation of respiratory failure caused by bilateral medial medullary infarction. It is the first Case report of its kind.

Case Presentation

Patient 1 A 54-year-old man with a history of diabetes mellitus suddenly presented left side weakness and dizziness, and gradually developed right side weakness. He admitted to the department of the neurology and magnetic resonance imaging (MRI) was taken, and it showed a recent infarction in bilateral medullary infarction (Fig. 1). At that time, the patient experienced acute respiratory arrest and tracheostomy was done. He transferred to another hospital and received rehabilitation treatment. The decannulation of tracheostomy was carried out before admission to our hospital. However, during hospitalization in our hospital, he displayed shallow breath and excessive use of neck accessory muscles and the volume of voice was very weak. Fluoroscopy showed decreased movement on bilateral diaphragms. The patient's initial vital capacity was 1720 cc at the supine position, 1250 cc at the sitting position, and the peak cough flow was 100 L/min. We started pulmonary rehabilitation including home mechanical ventilator management. Patient 2 A 77-year-old woman with a history of hypertension and hepatitis C virus carrier developed dizziness and admitted to the department of the neurology. MRI showed bilateral medullary infarction and she treated with intravenous tissue plasminogen activator (t-PA). Her voice and respiratory weakness are very similar to above case. Fluoroscopy showed decreased movement on bilateral diaphragms. The patient's initial vital capacity was 530 cc at the supine position, 610 cc at the sitting position, and the peak cough flow was uncheckable. The patient experienced respiratory failure and tracheostomy was done at the previous hospital. After admission to our hospital, decannulation of tracheostomy was done and the non-invasive home mechanical ventilator was applied via nasal mask.

Conclusion

This study is the first Case report describing the successful pulmonary rehabilitation of respiratory failure caused by bilateral medullary infarction. The patients with medial medullary infarction can be suffered from respiratory failure and pulmonary rehabilitation can prevent exacerbation of symptoms.