



Obsessive-Compulsive Symptoms after Japanese Encephalitis

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Japanese encephalitis is a viral infection of the brain and other vital organs. Patients often present with fever, headache, and vomiting. Some patients experience abnormal behaviors or acute psychosis. This is a report of a young man who suffered from this viral infection and presented with obsessive and compulsive symptoms. He was convinced that his bladder had problems and he could not urinate. He drank much water and this caused several episodes of seizure attacks for hyponatremia. He was treated with medications such as bupropion, clonazepam, and aripiprazole and behavior control, and his obsessive-compulsive symptoms were improved gradually with a reduction in massive water intake. He was discharged after 1 year of hospitalization and did not experience any seizures.

Key words: Japanese encephalitis, obsessive symptoms, compulsive symptoms

Introduction

Japanese encephalitis is an endemic disease of the Far East. It is caused by a neurotropic flavivirus infection. This viral encephalitis often leads to death in approximately 20% – 30% of severely infected people.¹ Many parts of the brain can be affected by Japanese encephalitis, including the brain stem, hippocampus, thalamus, basal ganglia, and white matter.² Abnormal behavior or acute psychosis possibly presents in those who develop a severe infection. Some American soldiers who were infected by the Japanese encephalitis were thought to have “war neurosis” during the Korean War in the 1950s.³ To the best of our knowledge, this is the first case report about

obsessive-compulsive symptoms after Japanese encephalitis in Taiwan.

Case Report

The case involved a 33-year-old single man who worked as an assistant professor in a university. He had a history of esthesioneuroblastoma at the age of 25 years for which he received surgical resection concurrently followed by radiotherapy. After regular following up, he was disease-free. He had no psychotic symptoms or cognitive defects after that. There was also no substance abuse, head injury, and family history of mental illness. He was infected by Japanese encephalitis at the age of 29 years old with manifestations of fever, fatigue, and impaired recent memory

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Received: August 2, 2021 Accepted: October 27, 2021

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initially. Disorientation, irrelevant speech, and epilepsy happened hours later. He was soon admitted to the intensive care unit for unstable vital signs. Laboratory findings at the emergency department showed leukocytosis, cerebrospinal fluid revealed clear, mild pleocytosis with lymphocytic predominance, and slightly elevated protein (120 leucocytes, 75% lymphocytes, 13% monocytes, 12% neutrophils, and protein 143.7 mg/dL) (Table 1). Magnetic resonance imaging (MRI) of the brain showed high FLAIR signal in the bilateral temporal lobes, bilateral thalamic and midbrain lesions, consistent with the Japanese encephalitis, and post-radiation change in bilateral frontal lobes, which was an old lesion (Fig. 1). Due to his persistent comatose status, he was then transferred to a respiratory care center and received a tracheostomy. Follow-up brain MRI 3 weeks later showed mild regressive size change, but new high T1WI signal in bilateral thalami, suggesting hemorrhagic formation (Fig. 2). Fortunately, he regained consciousness 1 month after his admission to the respiratory care center.

Obsessive and compulsive symptoms were noted by his mother after discharge from the hospital. He thought his bladder got some problems and he felt that he had difficulty in urination. Therefore, he drank much water.

Frequent urination with large amounts of urine output made him uncomfortable. In addition, he visited a urologist for help but no abnormal construction was found. He experienced several episodes of epilepsy attacked due to polydipsia and related hyponatremia. He was then transferred to a psychiatric department with the diagnosis of obsessive-compulsive symptoms after Japanese encephalitis, accompanied by cognitive function impairments. We prescribed bupropion (150 mg/day), clonazepam (1.5 mg/day), and aripiprazole (2.5 mg/day) for his obsessive-compulsive symptoms. Extra clonazepam (0.5 mg) was prescribed when he got

Table 1. Cerebrospinal fluid at the emergency department.

		Unit	Reference
Appearance	Clear	Clear	
Color	Colorless	Colorless	
Protein	143.7	mg/dL	H 15 – 45
WBC	120	μL	
RBC	55	μL	
Neutrophil	12	%	
Lymphocyte	75	%	
Monocyte	13	%	
RBC fresh:old	85:15		
India Ink	Negative	HPF	Negative

HPF: high-power field; RBC: red blood cell; WBC: white blood cell.

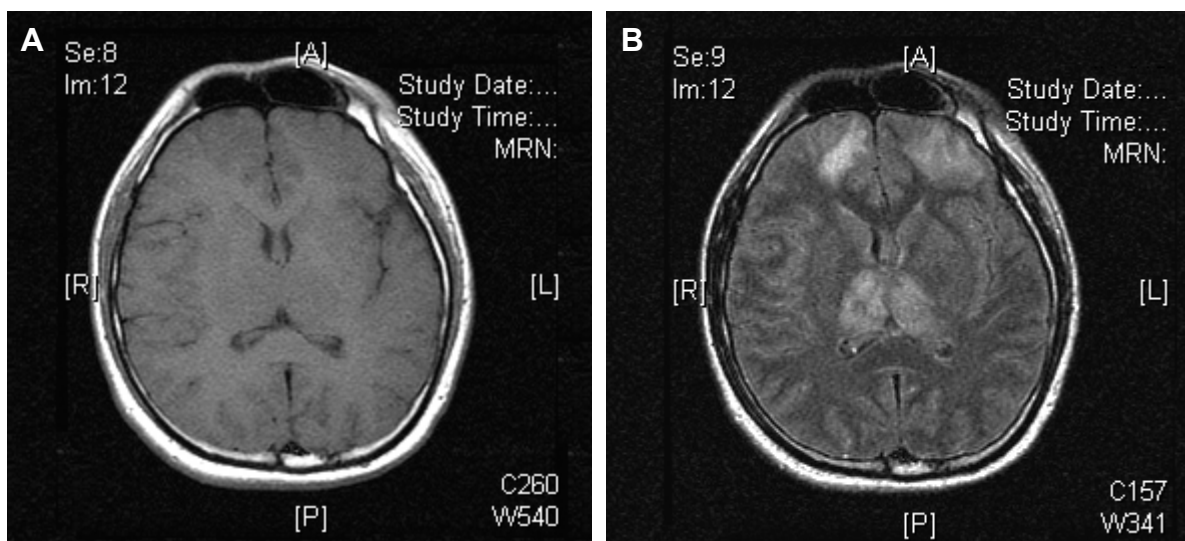


Fig. 1 Brain magnetic resonance imaging showing (A) symmetrical faint hypointensity on T1WI and (B) hyperintensity on FLAIR in bilateral thalami, suggestive of Japanese encephalitis.

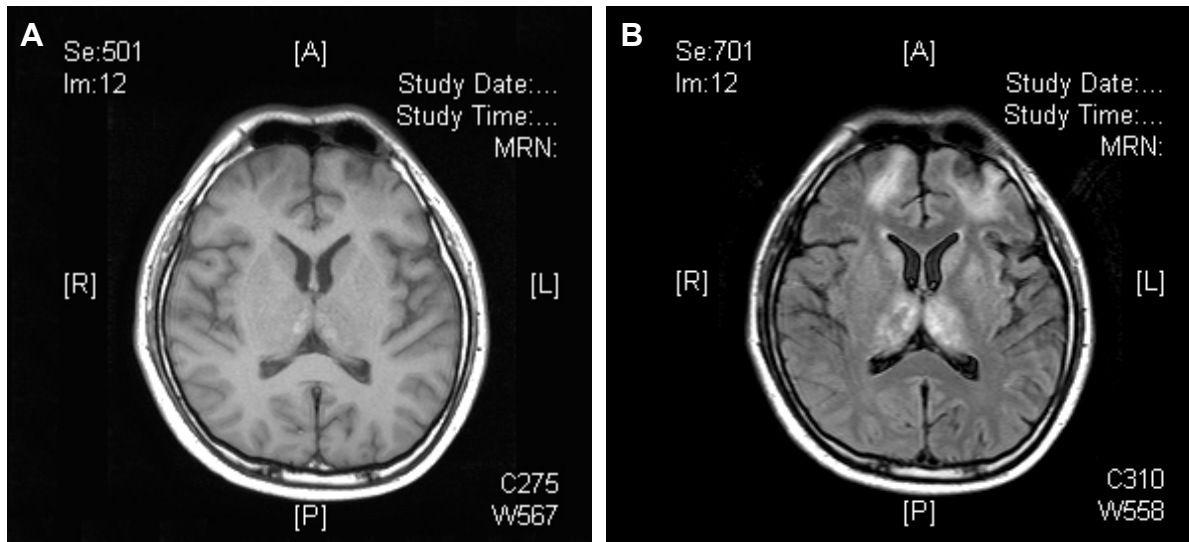


Fig. 2 Brain magnetic resonance imaging 3 weeks later on (A) T1WI and (B) FLAIR, showing less brain edema, but hemorrhagic formation in bilateral thalami, new high T1WI signal.

seriously worried about his bladder problems. We also prescribed a behavior therapy in combination. We discussed with the patient and set limitations for the time and quantity of drinking water. His obsessive and compulsive symptoms improved gradually. He was discharged after 1 year of hospitalization and there was no seizure attack.

Discussion

This patient presented obsessive-compulsive symptoms following encephalitis. This is uncommon in patients with Japanese encephalitis; however, some studies have reported obsessive-compulsive disorder in post-Herpes Simplex encephalitis syndromes. Monnet (2003)⁴ documented the case of a 22-year-old young man who had obsessive compulsive-like behaviors and thoughts after Japanese encephalitis in the subacute stage (3 weeks later) and in the sequelae stage. In our case, the patient presented obsessive-compulsive symptoms following Japanese encephalitis months later and that was referred to as an encephalitis sequel. He was very anxious concerning the condition of his bladder but not worried about other conditions. He always had a thought of the difficulty in urination. Although he knew it was

unreasonable, the idea was constantly on his mind.

Currently, there are many studies about the pathophysiology of obsessive and compulsive disorder. Aberrant neural circuits of cortico-striato-thalamo-cortical (CSTC) circuits are noted for obsessive and compulsive symptoms. CSTC circuits have been implicated in many cognitive functions.⁵ The Japanese encephalitis may affect the brain region, disrupt these circuits and alter the signal intensity that leads to obsessive and compulsive symptoms. Further studies are required to establish the association between Japanese encephalitis and mental illness.

Author Contributions

Kun-Yu Tu: study design, data collection, manuscript preparation, and literature research; Hsiao-Lan Chen: data collection, image interpretation, manuscript preparation, and literature research. All authors have read and agreed to the published version of the manuscript.

Funding

This research received no external funding.

Institutional Review Board Statement

Not applicable.

Informed Consent Statement

Informed consent was obtained for publication of this case report and accompanying images.

Data Availability Statement

Not applicable.

Conflicts of Interest

The authors declare no conflict of interest.

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