

Case report

Elevated CSF IL-6 in a patient with respiratory syncytial virus encephalopathy

Yuko Otake ^a, Takanori Yamagata ^{a,*}, Yasuko Morimoto ^a, Mari Imi ^a, Masato Mori ^a,
Toshinori Aihara ^b, Takashi Ichiyama ^c, Mariko Y. Momoi ^a

^a Department of Pediatrics, Jichi Medical University, 3311-1 Yaksiji, Shimotsuke, Tochigi 329-0498, Japan

^b Department of Radiology, Jichi Medical University, 3311-1 Yaksiji, Shimotsuke, Tochigi 329-0498, Japan

^c Department of Pediatrics, Yamaguchi University School of Medicine, 1-1-1 Minamikogushi, Ube, Yamaguchi 755-8505, Japan

Received 22 March 2006; received in revised form 26 June 2006; accepted 30 June 2006

Abstract

The patient was an 11-month-old boy who developed encephalopathy associated with respiratory syncytial virus bronchiolitis. Right hemispheric encephalopathy was indicated by left hemiparesis and a diffuse right hemispheric lesion detected with magnetic resonance imaging. Elevated levels of interleukin-6 in the cerebrospinal fluid during the acute phase suggested the involvement of increased production of one or more cytokines in the pathogenesis of viral related encephalopathy, similarly to that proposed for influenza encephalopathy.

© 2006 Elsevier B.V. All rights reserved.

Keywords: Respiratory syncytial virus; Encephalopathy; Cytokine; IL-6; Hemiconvulsion–hemiplegia syndrome (HHS)

1. Introduction

Respiratory syncytial virus (RSV) is a major causative virus for bronchiolitis in infants. Neurological complications associated with RSV have been reported to occur in 1.2–1.8% of patients with RSV bronchiolitis [1–5]. Most of the neurological complications were seizures without prolonged disturbance of consciousness and mild encephalopathy with a favorable prognosis. On neuroimaging studies, most of the patients with neurological complications showed normal findings and few of them showed brain edema [2,4,5]. Previously, only a few patients have been reported to have encephalopathy with sequelae [2–5] and the pathological mechanism of the encephalopathy was not known.

Here, we report on a patient with severe RSV encephalopathy in which elevated cytokine levels were detected in his cerebrospinal fluid (CSF).

2. Case report

The patient was an 11-month-old boy. He had fever and cough for three days prior to being admitted to the local hospital. The RSV antigen was detected from his naso-pharyngeal swab, and his condition was diagnosed as RSV bronchiolitis. He showed mild dyspnea and the level of his pulse oximetry at that time was 96%. On day 4, he suffered a generalized tonic–clonic convulsion (GTCC) for 1 h, and was transferred to our hospital. On admission, the patient was comatose with a Glasgow Coma Scale score of four. His body temperature was 39.3 °C. Neurological examinations detected left hemiplegia, intermittent nystagmus toward

* Corresponding author. Tel.: +81 285 58 7366; fax: +81 285 44 6123.

E-mail address: takanori@jichi.ac.jp (T. Yamagata).

his left side, and accelerated left patellar reflex. Soon after admission, he suffered a left side-dominant GTCC. Midazolam, glycerol, and phenobarbital were administered under intensive cardiorespiratory control. Aspartate aminotransferase concentration was 60 IU/L, and alanine aminotransferase concentration was 15 IU/L. CSF pressure was 30 cm H₂O. CSF cell count was 0 mm⁻³, protein concentration was 13 mg/dL and glucose concentration was 100 mg/dL. Computed tomography showed edema of the right hemisphere. On day 6, the patients' body temperature had returned to normal. Midazolam was discontinued and he regained consciousness. Partial seizures around the left half of his mouth occurred, and was treated by carbamazepin. Left side hemiparesis and right peripheral abducent nerve palsy were noted as neurological sequelae. On magnetic resonance imaging (MRI), diffuse high signal intensity on diffusion weighted images (DWI) and prolonged T2 relaxation time were noted in the right hemisphere

(Fig. 1a and b). High signal intensity on DWI subsided on day 22, whereas prolongation of T2 relaxation time became more apparent. ¹²³I-IMP SPECT on day 22 showed a marked decrease in perfusion of the right hemisphere (Fig. 1a and b). Electroencephalographic activity examined on day 16 was diffusely low with some predominance on the right side. By day 29, it was improved on the left side but was still low on the right side. The RSV antibody in serum was positive (CF 4×, NT 16×) on day 7, but was negative in the CSF on day 15.

The cytokines interleukin (IL)-6, IL-4, IL-2, IL-10, interferon- γ (INF- γ) and tumor necrosis factor- α (TNF- α) were measured in the CSF on days 4 and 8 and in the serum on days 10 and 11 by cytometric bead array kits (BD PharMingen, San Diego, CA) (Table 1). The level of IL-6 in the CSF was elevated, especially on day 4 (263.4 pg/mL) and while it had subsided by day 8 (18.6 pg/mL), it was still above normal (<9.7 pg/mL).

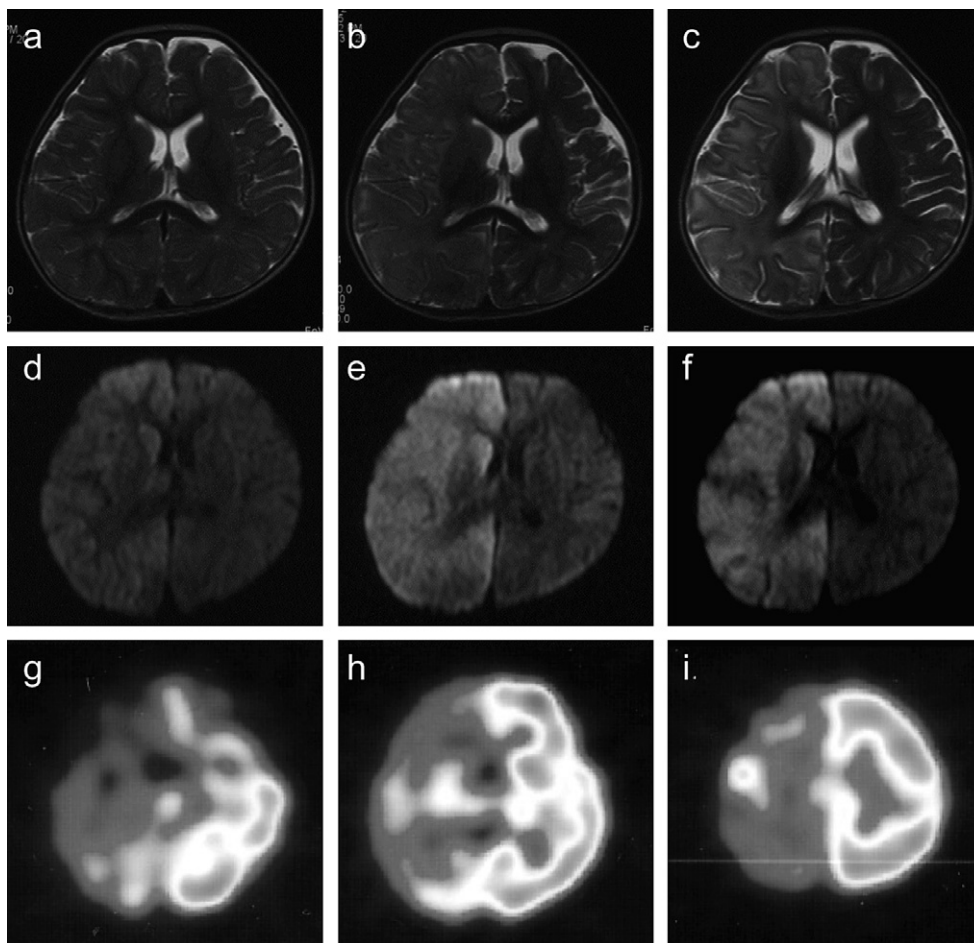


Fig. 1. T2WI and DWI MRI images on days 6 (a, d), 15 (b, e), and 22 (c, f) at the level of the third ventricle. DWI (d–f) showed high signal intensity in the right cerebral hemisphere, which was highest on day 15. High signal intensity was also noted in the right basal ganglia on day 15. Prolongation of T2 relaxation time was also noted in the same regions. ¹²³I-IMP SPECT images from day 16 (g–i). A marked decrease in cerebral perfusion was evident in the right hemisphere.

Download English Version:

<https://daneshyari.com/en/article/3038553>

Download Persian Version:

<https://daneshyari.com/article/3038553>

[Daneshyari.com](https://daneshyari.com)