



Internal Medicine Flashcard

A middle-aged woman with severe disorders of consciousness

Keizo Tanitame

Department of Diagnostic Radiology, Hiroshima Prefectural Hospital, 1-5-54 Ujinakanda, Minami-ku, Hiroshima 734-8530, Japan



1. Case description

A 47-year-old woman presented to the emergency department of the author's hospital with severe disorder of consciousness. She had been epileptic since early childhood and had many epileptic family members. Thus, she had been receiving anticonvulsants such as carbamazepine (CBZ) and diazepam. Her Glasgow coma scale on admission was 5 (E1V1M3). Brain computed tomography revealed no abnormalities, and electroencephalography revealed no seizure activity. An electrocardiogram showed normal sinus rhythm. Routine laboratory tests showed no abnormal data, but the blood concentration of CBZ was 30.3 mg/L (therapeutic concentration range: 412 mg/L). Conservative therapy with intravenous fluid was performed. From day 2 of hospitalization, her level of consciousness gradually improved, and the blood concentration of CBZ was decreased to be 5.5 mg/L. On day 5 of hospitalization, she underwent brain magnetic resonance imaging (MRI) scan before discharge to rule out structural brain abnormalities such as hippocampal sclerosis. The brain MRI revealed an oval lesion located in the central part of the splenium of the corpus callosum (Fig. 1). What is the diagnosis?

2. Discussion section

Mild encephalitis/encephalopathy with reversible splenial lesion (MERS) associated with taking overdose of CBZ was suspected because she recovered completely without aggressive therapy within 5 days of hospitalization. Three months later, follow-up brain MRI demonstrated that the splenial lesion completely disappeared.

The major cause of MERS is viral or bacterial infection, and MERS has also been reported to be associated with anticonvulsants [1]. About the pathogenesis of MERS, there are several hypotheses, including intramyelinic edema, axonal damage, hyponatremia, and oxidative stress. However, the exact pathogenesis of MERS is still unknown. A previous small sample study reported that patients with MERS have an elevated IL-6 and IL-10 levels in cerebrospinal fluid [2]. Therefore, activation of immune system may be associated with the pathogenesis of MERS. Although based on MRI findings, the differential diagnoses of MERS include Marchiafava-Bignami disease, multiple sclerosis, acute infarction, malignant lymphoma, and glioma, most patients with MERS

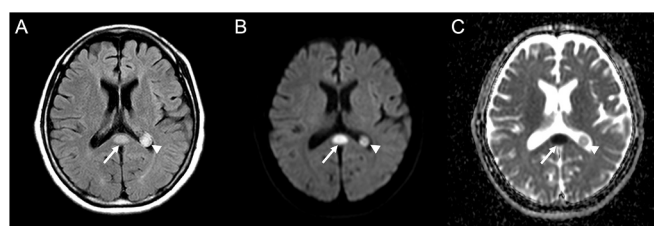


Fig. 1. MRI revealed an oval lesion with slightly high signal intensity on T2 fluid-attenuated inversion recovery (Panel A), high signal intensity on diffusion weighted imaging (Panel B), and decreased apparent diffusion coefficient (ADC) value on ADC map (Panel C) in the splenium of the corpus callosum. A choroid plexus cyst was also incidentally shown in the left lateral ventricle (arrow heads).

clinically recover within a month, and on MRI the splenial lesion of MERS completely disappears as the patient recovers. In some previous reports, the patients with MERS were treated with methylprednisolone pulse therapy or intravenous immunoglobulin therapy. However, all patients without these therapies recovered completely, which suggests that MERS may not need to be treated [3].

Declaration of Competing Interest

I disclose no actual or potential conflict of interest including any financial, personal or other relationships with other people or organizations within last three years.

References

- [1] Kim S.S., Chang K.H., Kim S.T., Suh D.C., Cheon J.E., Jeong S.W., et al. Focal lesion in the splenium of the corpus callosum in epileptic patients: antiepileptic drug toxicity? *AJNR Am J Neuroradiol.* 1999; 20: 125–9.
- [2] Miyata R., Tanuma N., Hayashi M., Imamura T., Takanashi J., Nagata R., et al. Oxidative stress in patients with clinically mild encephalitis/encephalopathy with a reversible splenial lesion (MERS). *Brain Dev.* 2012; 34: 124–7.
- [3] Yuan J., Yang S., Wang S., Qin W., Yang L., Hu W. Mild encephalitis/encephalopathy with reversible splenial lesion (MERS) in adults—a case report and literature review. *BMC Neurol* 2017;17:103.

E-mail address: tntrad@gmail.com.

<https://doi.org/10.1016/j.ejim.2019.12.023>

Received 24 November 2019; Accepted 26 December 2019

Available online 30 December 2019

0953-6205/ © 2019 European Federation of Internal Medicine. Published by Elsevier B.V. All rights reserved.