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Photos In Pediatrics

Magnetic resonance imaging diagnosis of acute focal bacterial nephritis with MERS

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Acute focal bacterial nephritis (AFBN) is a subtype of upper urinary tract infection (UTI) with focal areas of non-liquefactive necrosis in the renal cortex. Most AFBN patients have poor pyuria, often delaying the diagnosis of AFBN. Ultrasonography alone is insufficient to diagnose AFBN, as it is often diagnosed by contrast-enhanced computed tomography (CT) that identifies a wedge-shaped kidney defect. However, clinicians are hesitant to perform contrast-enhanced CT because of the risks associated with allergic reaction to the contrast agents and radiation exposure.

Mild encephalitis/encephalopathy with a reversible splenial lesion (MERS) is an encephalopathy that presents with reversible splenial lesions of the corpus callosum upon magnetic resonance imaging (MRI). Viral infections (such as influenza or rotavirus) are commonly the cause of MERS and have known to be complicated with Kawasaki disease[1] and AFBN, which is reported to be the possible cause of high C-reactive protein in MERS patients.[2] Although MERS prognosis is reportedly good,[3] it is not always the case, as it can progress to cerebellitis, resulting in neurological sequelae if associated with rotavirus infection.[4] MERS with AFBN may also need to be properly diagnosed and treated.

In our hospital, we diagnosed three patients with various presentations of AFBN with MERS using diffusion-weighted imaging (DWI) MRI of the brain and kidneys, as previously described (Fig. 1).[5] Patient 1, a 5-year-old boy, experienced fever, headache, visual hallucinations, vomiting, and right abdominal and back pain; his CRP level was 13.72 mg/dL. Patient 2, a 3-year-old boy, presented with a fever, seizures, and visual hallucinations; his CRP level was 6.59 mg/dL. Patient 3, a 3-year-old boy, experienced fever, uncharacteristic behavior and speech, and vomiting; his CRP level was 7.68 mg/dL. Urine examinations for all patients showed no pyuria. *Enterococcus faecalis* was the identified bacterial pathogen in all patients. None presented with neurological sequelae.

Informed consent for publishing this case report was obtained from the patient's parents.

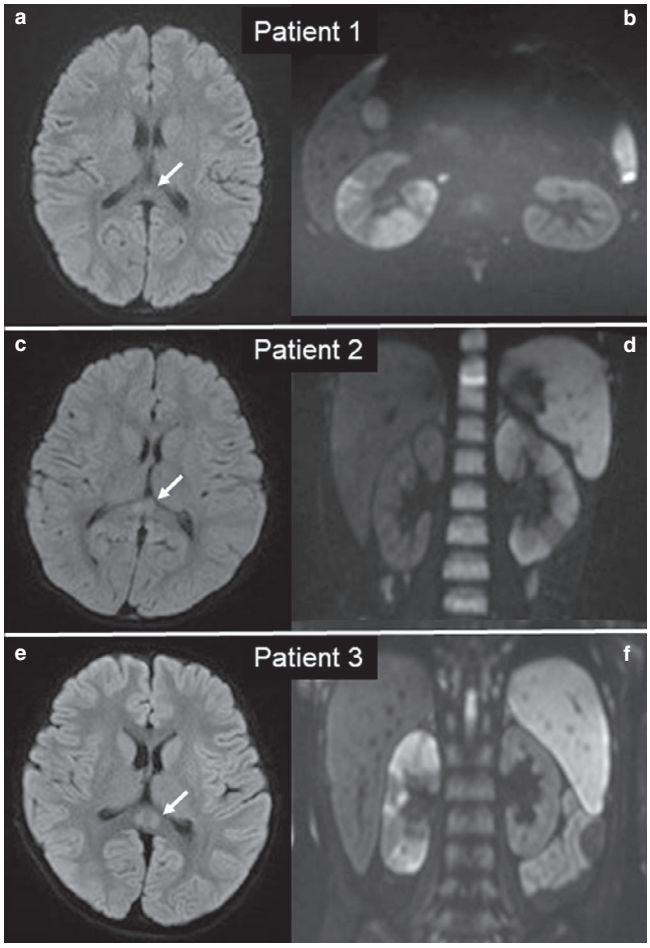

Fig. 1

The usefulness of diffusion-weighted imaging (DWI) MRI has been reported in acute pyelonephritis in adult patients,[6] and it may also be useful in AFBN. There is no requirement for contrast agents and radiation exposure in MRI. In pediatric patients, sedation is often required to perform MRI; however, each patient was diagnosed with AFBN and MERS simultaneously during the same sedation. Based on our experience, MRI may be a good option for diagnosing AFBN, especially when the patient presents with central nervous system symptoms indicative of MERS complications, such as convulsions, impaired consciousness, and abnormal behavior.

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Disclosure

The authors declare o conflict of interest.

Author contributions

Y.F. drafted and revised the initial manuscript; G.I., S.K., and S.Y. critically revised the manuscript for important intellectual content. All authors read and approved the final manuscript.

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