The Egyptian Journal of Radiology and Nuclear Medicine (2011) **42**, 211–214

Egyptian Society of Radiology and Nuclear Medicine

The Egyptian Journal of Radiology and Nuclear Medicine

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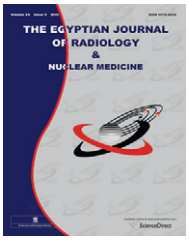

West Nile virus meningoencephalitis during pregnancy: Case report with MR imaging findings

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Received 20 April 2011; accepted 20 June 2011
Available online 19 July 2011

KEYWORDS

West Nile virus;
Pregnancy;
Meningoencephalitis;
Magnetic resonance imaging

Abstract MR imaging findings of West Nile virus meningoencephalitis during pregnancy are unknown. We report the first case of serologically proved West Nile virus meningoencephalitis complicating pregnancy with MRI findings. MR imaging of the brain revealed abnormal hyperintensity in the periventricular white matter near the left frontal horn and insular left lobe on fluid-attenuated inversion recovery and T2-weighted images. Evolution was favorable, and no obvious fetal consequences of infection were noted after birth. Recognition of the MR imaging appearance of this entity is important because of the expanding epidemic.

1. Introduction

West Nile virus (WNV) is an important public health problem in several countries. It is the most widespread arbovirus in the world (1). WNV is maintained in nature in a cycle between birds and mosquitoes (2). In Tunisia, two peaks of epidemic meningitis and meningoencephalitis due to WNV were reported: one in 1997 and the other in 2003 (3).

MR imaging suggests abnormalities in the brain and meninges of WNV-infected patients presenting with Cerebral Nervous System (CNS) disease (4–6). However, most of these studies were performed retrospectively. Thus, the results do not provide predictive capabilities to WNV infection (2).

2. Case report

A healthy 29-year-old (gravida 2, para 1) woman from the south of Tunisia presented to the Infectious Diseases Department at 38 weeks gestation with a 7-day history of fever, headache and dysarthria. The patient was febrile to 38.5 °C (101.3F). No nuchal rigidity or focal neurologic signs were revealed. Cerebrospinal fluid (CSF) showed 80 nucleated cells

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Peer review under responsibility of Egyptian Society of Radiology and Nuclear Medicine.
doi:10.1016/j.ejrnm.2011.06.007

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predominantly of lymphocytes (95%). The CSF protein and glucose concentrations were 68 and 50 mg/dL, respectively, and Gram's stain showed no bacteria. Serum glucose was 101 mg/dL at the time of the lumbar puncture. Brain magnetic resonance imaging (MRI) revealed abnormal hyperintensity in the periventricular white matter near the left frontal horn and insular left lobe on fluid-attenuated inversion recovery (FLAIR) and T2-weighted images (Fig. 1). A discrete hypointensity was noted on T1-weighted images. Diffusion-weighted (DW) imaging was normal. Antibiotic therapy was begun using ampicillin 2 g i.v. every 4 h, cefotaxime 3 g i.v. every 4 h and acyclovir 750 mg i.v. every 8 h. The antiviral treatment was discontinued when CSF herpes simplex virus polymerase chain reaction returned negative. Her fever resolved, and she noted improvement in her symptoms within 5 days of admission. Tests for common bacterial, mycobacterial, viral and fungal causes of meningitis were negative. Ultrasonography and fetal heart rate monitoring were normal. Serologic testing subsequently secured the diagnosis of WNV with the detection of IgM and G antibodies in the serum and CSF. Antibiotics were discontinued when recent WNV infection was confirmed. Supportive measures were instituted for her symptoms. After 2 weeks, she vaginally delivered a newborn in good health conditions. Follow-up MRI 3 months later showed persistence of the T2 hyperintense regions seen previously and noted a new lesion at the right semi-oval center on FLAIR sequences (Fig. 2). There was no enhancement after intravenous contrast administration. After 6 months of follow-up, the patient and newborn were in good health.

3. Discussion

Many WNV infections are asymptomatic. Symptoms may develop in 20–40% (7). Less than 1% of infected individuals

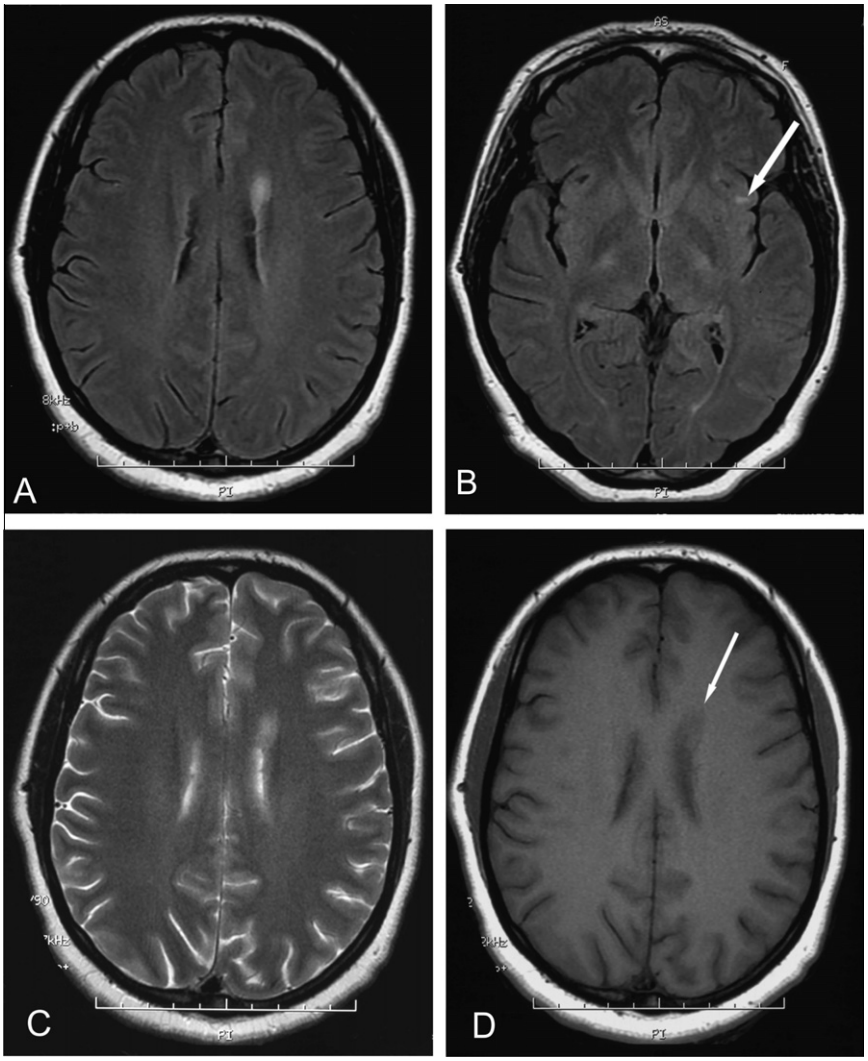

Figure 1 Images at the time of admission, in the case of a 29-year-old pregnant woman with serologically proved West Nile virus meningoencephalitis. (A) Axial fluid-attenuated inversion recovery MR image reveals hyperintensity in periventricular white matter near the left frontal horn. (B) Axial fluid-attenuated inversion recovery MR image reveals hyperintensity in insular left lobe. (C) Axial fast spin-echo T2-weighted MR image shows hyperintensity in periventricular white matter near the left frontal horn. (D) Axial fast spin-echo T1-weighted MR image shows a discrete hypointensity in periventricular white matter near the left frontal horn.