The Journal of Emergency Medicine, Vol. 45, No. 6, pp. 849–855, 2013

0736-4679/$ - see front matter

ELSEVIER

http://dx.doi.org/10.1016/j.jemermed.2013.05.063

Clinical Communications: OB/GYN

SEVERE SUBARACHNOID HEMORRHAGE ASSOCIATED WITH CEREBRAL VENOUS THROMBOSIS IN EARLY PREGNANCY: A CASE REPORT

Junkoh Yamamoto, MD, PHD,* Shingo Kakeda, MD, PHD,† Mayu Takahashi, MD, PHD,* Masaru Idei, MD,* Yoshiteru Nakano, MD, PHD,* Yoshiteru Soejima, MD,* Takeshi Saito, MD, PHD,* Daisuke Akiba, MD,* Eiji Shibata, MD, PHD,‡§ Yukunori Korogi, MD, PHD,† and Shigeru Nishizawa, MD, PHD*

*Department of Neurosurgery, †Department of Radiology, ‡Department of Obstetrics and Gynecology, University of Occupational and Environmental Health, Kitakyushu, Japan, and §Japan Environment and Children's Study, University of Occupational and Environmental Health Subunit Center, Kitakyushu, Japan

Reprint Address: Junkoh Yamamoto, MD, PHD, Department of Neurosurgery, University of Occupational and Environmental Health, 1-1 Iseigaoka, Yahatanishi-ku, Kitakyushu, 807-8555, Japan

□ **Abstract—Background: Cerebral venous thrombosis (CVT) rarely induces subarachnoid hemorrhage (SAH). During late pregnancy and puerperium, CVT is an uncommon but important cause of stroke. However, severe SAH resulting from CVT is extremely rare during early pregnancy. Objective: We report on a rare case of severe SAH due to CVT, and discuss the potential pitfalls of CVT diagnosis in early pregnancy. Case Report: A 32-year-old pregnant woman (9th week of pregnancy) presented with slight head dullness. Initial magnetic resonance imaging (MRI) revealed focal, abnormal signal intensity in the left thalamus. Nine days later, the patient developed a generalized seizure and severe SAH was detected with computed tomography (CT) scan. MRI and cerebral angiography revealed a completely thrombosed superior sagittal sinus, vein of Galen, straight sinus, and right transverse sinus. Transvaginal sonography indicated a missed abortion. The day after admission, the patient presented again with a progressive loss of consciousness and signs of herniation. The patient underwent emergency decompressive craniotomy, followed by intrauterine curettage. Two months later, she made an excellent recovery except for a slight visual field defect. Conclusions: A rare case of severe SAH due to CVT is reported, with emphasis on the potential pitfalls of CVT diagnosis in early pregnancy.** © **2013 Elsevier Inc.**

□ **Keywords—hematoma; emergency; magnetic resonance imaging; decompressive craniotomy; diffusion-weighted image; cerebral venous thrombosis; subarachnoid hemorrhage**

INTRODUCTION

Cerebral venous thrombosis (CVT) is an infrequent, but potentially fatal disease. Acute-stage CVT is a potential cause of cortical subarachnoid hemorrhage (SAH) (1–3). Pregnancy and puerperium are well-known risk factors for CVT. However, severe SAH is extremely rare in early pregnancy. Because of its variable modes of onset and wide spectrum of neurological signs and symptoms, making a correct diagnosis of CVT based on clinical assessment can be difficult (4,5). In addition, computed tomography (CT) scan and invasive radiological examinations using a contrast reagent are usually avoided in pregnant patients, even with clinical suspicion of CVT.

We treated a patient with CVT who presented in early pregnancy with severe SAH. The patient underwent surgery and intensive treatment and recovered from the neurological deficits. To our knowledge, this is the first reported case of CVT resulting in severe SAH in early pregnancy. We present this rare case and discuss the potential pitfalls in the CVT diagnosis.

RECEIVED: 19 May 2012; FINAL SUBMISSION RECEIVED: 30 January 2013;
ACCEPTED: 1 May 2013

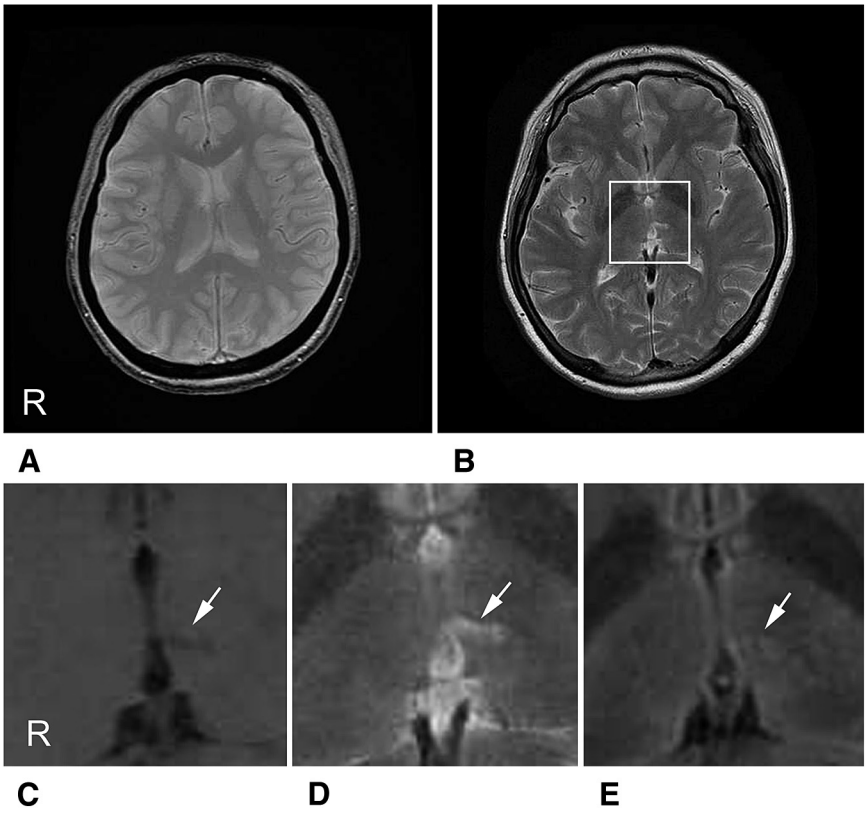

Figure 1. Magnetic resonance imaging (MRI) on initial presentation. Axial view of T2*-weighted image (T2*WI). (A) T2-weighted image (T2WI) (B, D), T1-weighted image (T1WI) (C), and fluid-attenuated inversion recovery (FLAIR) (E). (C, D), and (E) are magnified views of B showing the small and subacute parenchymal abnormal intensity in the left thalamus (arrows). T2*WI shows no abnormality (A).

CASE REPORT

A 32-year-old woman in her 9th week of pregnancy, without previous medical problems, experienced slight head dullness. The patient presented to the emergency department (ED) at our hospital for an off-hours consultation. Neurological examination revealed no deficits, and blood examination showed no abnormalities. Magnetic resonance imaging (MRI) studies were performed using an MR system (Signa EXCITE 3 T; GE Medical Systems, Milwaukee, WI) with a dedicated eight-channel phased-array coil (USA Instruments, Aurora, OH). This patient underwent our standard brain MRI protocol, including T1WI, T2WI, fluid-attenuated inversion recovery images (FLAIR), T2*WI, and diffusion-weighted images (DWI). The following imaging parameters were used: 2500/10/not available/5/320 × 224/22 × 22/1 min, 30 s (TR ms/TE ms/FA/section thickness/matrix/FOV/imaging time) for T1WI, 4000/85/90/5/512 × 512/22 × 22/3 min, 20 s for T2WI, 12000/140/not available/5/256 × 224/22 × 22/3 min, 30 s for FLAIR, 500/10/30/5/320 × 192/22 × 22/3 min, 16 s for T2*WI, and 6000/60/not available/5/128 × 256/22 × 22/30 s with b values of 0 and 1000 using single-shot multi-slice spin-echo echo-planar imaging for DWI. The imaging parameters for 3D time-of-flight (TOF) MR angiography (MRA) were 30 ms/3.3 ms/20°/1 mm/18 cm/384 × 224/4 min, 32 s (repetition time ms/echo time ms/flip angle/section thickness/FOV/matrix/imaging time). MRI showed a focal, subacute, abnormal parenchymal intensity in the left thalamus; however, neither acute ischemic changes nor vascular abnormalities were detected (Figure 1). Considering the clinical presentation and laboratory data, the possibility of acute cerebrovascular disease was excluded and the patient was diagnosed with muscle-constriction headache. The patient was in the early stages of pregnancy, and other detailed imaging examinations were also limited due to the off-hours consultation. Therefore, the patient returned home with a prescription for nonsteroidal anti-inflammatory drugs (acetaminophen). The patient subsequently felt a gradual increase in headache pain and developed a fever. She presented to our hospital again, 9 days after the first presentation, complaining of headache. Her body temperature was 39.6°C and her blood pressure was 118/76 mm Hg (systolic/diastolic). Meningeal irritation tests (for Kernig's sign) were found to be