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Citation:

DOI: http://dx.doi.org/10.19104/jnn.2016.21

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Sudden Onset Headache in a Post-Partum Young Female

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Received Date: April 12, 2016, Accepted Date: June 08, 2016, Published Date: June 18, 2016.

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Abstract

We present the case of a 33 year old female presenting with acute neurological signs including right sided neglect and confusion four days postpartum. The original non-contrast CT brain demonstrated an acute left temporal intraparenchymal hemorrhage. A cerebral catheter angiogram was performed and demonstrated the typical appearances of RCVS (Reversible Cerebral Vasoconstriction Syndrome).

Introduction

This is a case of an acute presentation of young women four days postpartum with an intra-parenchymal hemorrhage. The imaging findings and possible differential diagnoses are discussed. RCVS (reversible cerebral vasoconstriction syndrome) is the primary diagnosis and is presented using the case as an example of the classical imaging findings that lead to the diagnosis. This case demonstrates the importance of having RCVS on the differential list for similar clinical presentations. Early diagnosis and treatment is essential to avoid ischemic and hemorrhagic complications.

Case

A 33 year old female patient presented with sudden onset headache, confusion and right-sided neglect four days postpartum.

The patient had a complicated 3rd trimester of pregnancy with a breech presentation, intrauterine growth retardation and oligohydramnios. She was subsequently diagnosed with eclampsia and severe hypertension at 33 weeks gestation which progressed to hemolytic anemia, elevated liver enzymes and low platelet (HELLP) syndrome diagnosed at 36+4 weeks gestation. She underwent an emergency Caesarean section at 37+3 weeks gestation and recovered well. Four days postpartum, she developed a severe headache, became disoriented and confused with right-sided motor symptoms.

Her background history was unremarkable; she took no regular medications and had no relevant family or social history.

On examination, she had right-sided neglect with an associated right hemianopia and dysphasia. Her blood pressure was within normal limits at that time, liver biochemical tests were normalizing and her platelet count was 129 × 10^9/L.

The patient underwent a non-contrast CT brain (Figure 1) and a catheter cerebral angiogram (Figure 2). The differential diagnosis included; RCVS (Reversible Cerebral Vasoconstriction Syndrome), a hypertensive Bleed, primary Cerebral Angitis and focal Cerebritis.

RCVS was the primary diagnosis based on the clinical presentation and imaging findings seen on the catheter angiogram demonstrating multifocal arterial narrowing with associated fusiform dilatation giving the classical "beaded appearance" (Figures 2 and 3).

The patient was treated with an oral calcium channel blocker (Nimodipine 60 mg). Her blood pressure was tightly monitored and controlled to avoid hypotension. Symptomatic relief was provided with simple analgesia. The patient became asymptomatic with treatment and a repeat catheter cerebral angiogram was performed six weeks from the onset of symptoms. The repeat study was normal demonstrating interval resolution of the arterial beading seen on the prior study.

Discussion

RCVS is caused by diffuse segmental constriction of cerebral arteries that is reversible [1]. It was originally named “Call-Flemming syndrome” based on a case series of patients with severe headache, lack of histological anomalies and reversibility of imaging findings; later RCVS was a unifying term given to a spectrum of vasoconstrictive syndromes [2].

Etiologies for RVCs include; idiopathic, postpartum state, vasoactive drugs, catecholamine secreting tumors, extra or intracranial large artery disorders, exposure to blood products and intracranial haemorrhage [2,3].

The diagnosis is made clinically based on an accurate clinical history supported by imaging investigations. Hematological and cerebrospinal fluid laboratory investigations typically do not

Figure 1: Non-contrast CT brain showing a 2 cm intraparenchymal haematoma in the left parietal lobe with mild surrounding oedema.
Contribute to diagnosis. Computed tomography (CT) of the brain is the first line imaging modality which may identify intracranial hemorrhage, infarction or edema which is reported findings in 12-81% of patients with suspected RCVS [1].

Magnetic resonance (MR) imaging and MR angiography (MRA) are beneficial to rule out alternate diagnoses and to identify complications such as stroke with diffusion weighted imaging or intracranial hemorrhage on fluid attenuation and inversion recovery (FLAIR) and T2-weighted sequences [4]. However, MRA evaluation is limited due to spatial resolution, therefore a negative MRA does not exclude RCVS [5], and the catheter cerebral angiography is the criterion standard for diagnosis, with cerebral arterial narrowing and fusiform dilatation being the classic appearance of RCVS. In the case presented the patient had a diagnostic catheter angiogram immediately following her non-contrast CT brain. An MRI/MRA was not required as the diagnosis was made based on the classical findings seen on angiography.

In our patient, a noncontrast CT showed a left parietal intraparenchymal hematoma (Figure 1), and the cerebral catheter angiography revealed multiple areas of arterial narrowing and dilatation giving a 'beaded' appearance (Figures 2 & 3).

Treatment of RCVS includes withdrawal of any potential precipitants, symptom relief, blood pressure control and seizure prophylaxis. RCVS is typically self-limiting with resolution of symptoms in 3 to 6 weeks [1], which was also the case with our patient.

Figure 2: Right (A) and magnified left (B) middle cerebral artery injections from a catheter cerebral angiogram showing multifocal arterial narrowing throughout the anterior circulation, most marked along distal cortical branches.

Figure 3: Right vertebral injection from a catheter cerebral angiogram in anteroposterior (A) and magnified oblique projections (B), also demonstrating diffuse arterial irregularities (arrows).
References


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Received Date: April 12, 2016, Accepted Date: June 08, 2016, Published Date: June 18, 2016.

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Citation: O'Brien C, Asadi H, Kok HK, Looby S, O'Hare A, et al. (2016) Sudden Onset Headache in a Post-Partum Young Female. J Neurol Neurosurg 3(1): 121.