

Endovascular treatment of brain arteriovenous malformations ruptured during pregnancy – A report of two cases

Andrea Salvati*, Cristina Ferrari, Luigi Chiumarulo, Nicola Medicamento, Franca Dicuonzo, Roberto De Blasi

Department of Neurological and Psychiatric Sciences, Neuroradiology Unit, University of Bari, Italy

ARTICLE INFO

Article history:

Received 27 March 2011

Accepted 7 June 2011

Available online 30 June 2011

Keywords:

Brain arteriovenous malformation

Stroke

Pregnancy

Embolization

Endovascular therapy

Angiography

ABSTRACT

Acutely ruptured brain arteriovenous malformations (AVMs) are a known etiology of hemorrhagic stroke during pregnancy. The aim of this paper is to report two cases of patients which presented with ruptured AVMs during pregnancy and were successfully treated with endovascular techniques. Peculiar issues related to the application of this treatment strategy in this category of patients will be discussed as well. To the best of our knowledge, this therapeutic approach in cerebral AVMs ruptured during pregnancy has not been described yet.

© 2011 Elsevier B.V. All rights reserved.

1. Introduction

Pregnancy-related stroke has an incidence rate seemingly ranging from 9 to 34 events per 100,000 deliveries, [1,2] and may account for up to 5% of all maternal mortalities [3]. Most common etiologies for peripartum ischemic stroke are pre-eclampsia, eclampsia, cardioembolism, and venous thrombosis, while uncontrolled hypertension, pre-eclampsia, eclampsia, arteriovenous malformations (AVMs) and arterial aneurysms are responsible for most of intracranial hemorrhages during pregnancy and puerperium [4]. Mortality rate of pregnancy-related cerebrovascular events as a whole has been reported as 15.8% [5], and is higher for hemorrhagic strokes.

In this paper we report our experience with two pregnant patients who presented with acutely ruptured brain AVMs: both cases were successfully managed with endovascular therapy alone.

2. Case reports

2.1. Case 1

The first case is that of a 23 years-old patient, which presented acutely with severe headache, left hemiparesis (mostly affecting the upper limb), and vomiting, while she was pregnant at the 19th week. Head magnetic resonance (MR) in emergency showed an intracranial

hemorrhage located in the subcortical white matter of the right frontal lobe and an intraventricular AVM draining into deep dilated veins directed to the midline. Digital subtraction angiography (performed in emergency with abdominal shielding) confirmed the presence of the malformation, fed by hypertrophic branches of the calloso-marginal artery and draining into a single deep tortuous and aneurysmatic vein tributary of the internal cerebral vein (Fig. 1a–c).

Endovascular embolization was performed under general anesthesia, navigating two major feeders of the AVM and with n-butyl-2-cyanoacrylate injection (Fig. 1d–f); at the end of the procedure the largest part of the nidus was obliterated and the draining vein filled much more slowly (Fig. 2a–c).

The following day she underwent a MR that showed a circumscribed ischemic lesion in a right frontal parasagittal sulcus. The patient had a complete neurological recovery and at term she underwent a cesarean cut and delivered a healthy baby. Fifteen days following the delivery the patient underwent a cerebral angiography, that showed a complete occlusion of the malformation (Fig. 2d and e). This finding is stable at MR angiography follow-up.

2.2. Case 2

The second patient of our report is a 30 years-old patient, pregnant at the 26th week, which presented with sudden headache and vomiting. MR was executed in emergency and showed a small intracranial bleeding in a right posterior periventricular location, and a right rolandic AVM. Angiography was performed in emergency with abdominal shielding: it showed that the malformation was fed by

* Corresponding author at: Neuroradiologia, Policlinico, Piazza G. Cesare 11, 70124, Bari, Italy. Tel.: +39 0805592071.

E-mail address: salvati_andrea@hotmail.com (A. Salvati).

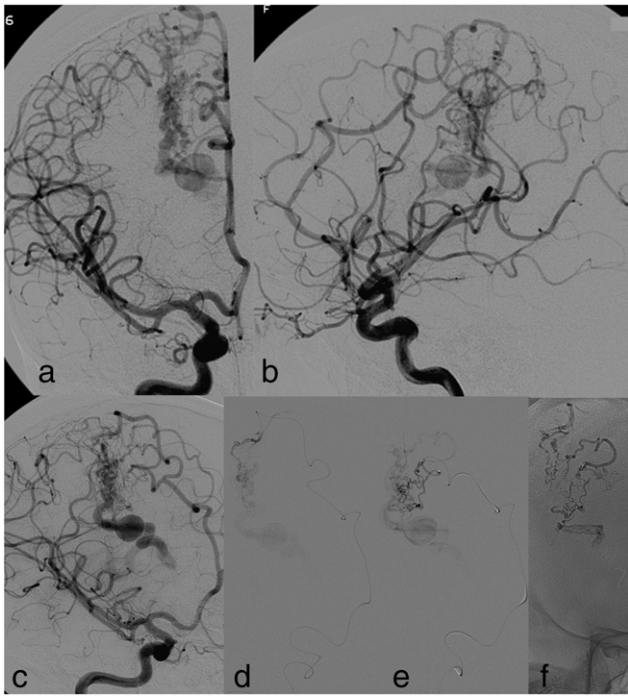


Fig. 1. Patient 1. Digital subtraction angiography and subsequent embolization of the shunt. (a) Postero-anterior view. (b) Lateral view. The AVM is fed by branches of the right pericallosal artery and exclusively draining into a dilated deep vein; a venous aneurysm is evident. (c) A right anterior oblique view is chosen as work projection. (d) First microcatheterism of a pedicle and glue injection. (e) Second microcatheterism and further embolization. (f) Glue cast at the end of the embolization.

branches of the right posterior, anterior and middle cerebral artery and that it drained into a single rolandic vein tributary of the sagittal sinus. No arterial flow-related or nidal aneurysms, or venous aneurysms were seen (Fig. 3a–c). Support medical therapy and close observation were carried out, and the patient had a complete clinical recovery in the following week.

At the end of pregnancy a cesarean cut was performed and the patient delivered a healthy baby; fifteen days later, at the normalization of the coagulation parameters, she underwent an endovascular embolization of the AVM with cyanoacrylate glue (Fig. 3d and e); the procedure was uneventful and achieved the complete obliteration of the nidus (Fig. 4a–c).

Two years and six months later, MR showed a pathological enhancement of the embolized nidus, indicative of a recanalization of the shunt. A new angiography confirmed the recurrence of the AVM through a branch of the callosal-marginal artery (Fig. 4a): under general anesthesia the vessel was navigated (Fig. 4c) and the shunt was embolized with glue (Fig. 4d).

3. Discussion

The decision for interventional treatment in pregnant patients with an AVM that has bled is particularly challenging, and due to the rarity of this event no definitive guidelines exist. According to the majority of Authors [6,7], the management should be mainly based on neurosurgical criteria than on obstetric considerations; this disease should then be approached as in the non-pregnant state, with regard to both the treatment option and to timing. While early surgical excision of ruptured AVMs has been reported as successful and safe by Kuhmonen et al. [8], and Pavesi et al. [9], there are no evidences from the literature that the majority of ruptured AVMs should be treated in

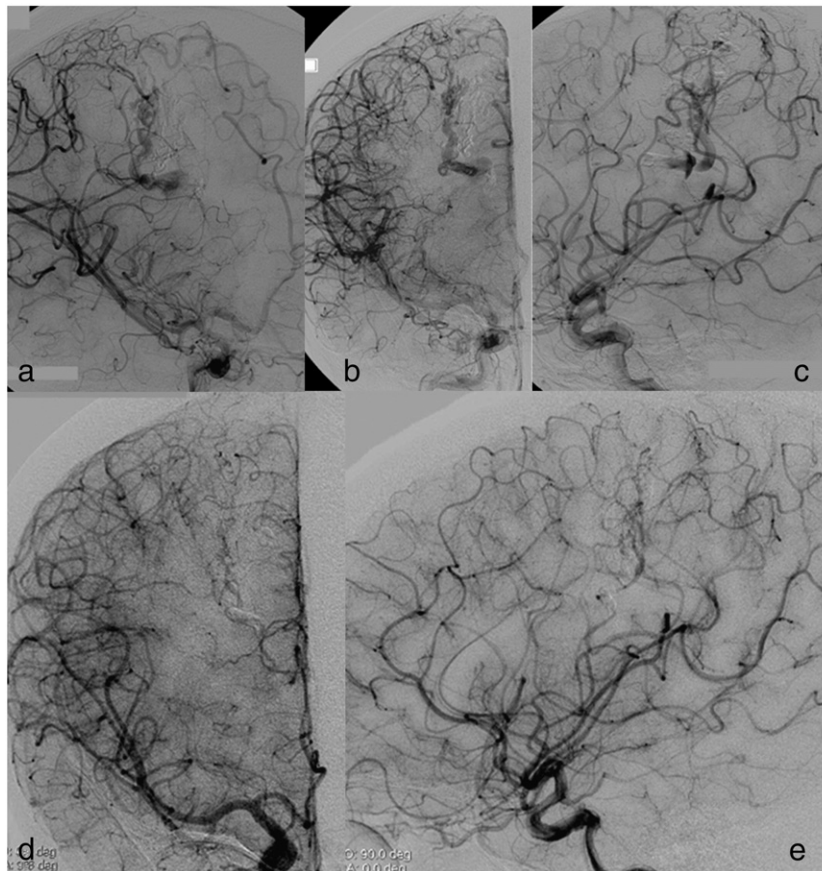


Fig. 2. Patient 1. Post-procedural angiographies. (a) Right anterior oblique, (b) postero-anterior, (c) lateral views immediately following embolization show only a partial and delayed filling of the draining vein. (d), (e) Control angiography performed after the delivery shows a complete obliteration of the malformative arterio-venous shunt.

Download English Version:

<https://daneshyari.com/en/article/8282531>

Download Persian Version:

<https://daneshyari.com/article/8282531>

[Daneshyari.com](https://daneshyari.com)