

Stroke code in a term pregnant woman: a case report.

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Case Report

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Abstract

Background

Aortic dissection during pregnancy is a rare and potentially fatal condition whose presentation may be atypical and diagnostically challenging. Delayed recognition can have catastrophic maternal and fetal consequences, particularly when neurological symptoms predominate.

Case presentation

: We report the case of a 38-year-old primiparous woman at 40 weeks of gestation who presented with acute ischemic stroke secondary to Stanford type A acute aortic dissection associated with hemopericardium. The diagnosis was not initially established despite two computed tomography angiography studies, both limited by suboptimal vascular opacification. Bedside transthoracic echocardiography performed in the interventional neuroradiology suite ultimately revealed the diagnosis. An urgent multidisciplinary strategy was undertaken, including cesarean delivery followed by aortic repair, with favorable maternal and neonatal outcomes.

Conclusions

This case highlights the need for a high index of clinical suspicion in pregnant patients with acute neurological symptoms and possible cardiovascular instability. It also underscores the limitations of conventional imaging in complex hemodynamic settings and the key role of bedside echocardiography as a rapid diagnostic tool in emergency care.

BACKGROUND

Stanford type A acute aortic dissection (AAD) during pregnancy is an uncommon but life-threatening condition associated with high maternal and fetal mortality. Its estimated incidence ranges from 0.4–3.5 cases per 100,000 pregnancies, and approximately half of cases occur during the third trimester or peripartum period, when hormonal changes and increased circulating volume generate greater vascular wall stress. Bicuspid aortic valve disease, usually associated with aortic dilatation, confers particular vulnerability to these factors [1, 2].

Although the typical presentation of AAD generally includes sudden and severe chest pain, pain may be absent or have atypical features in up to 10–20% of the general population and in 20–30% of women [3]. Involvement of the supra-aortic trunks (SAT) may cause neurological manifestations as the initial presentation in 10–15% of AAD cases [4]. These atypical presentations may delay diagnosis, particularly when the initial clinical picture suggests an isolated cerebrovascular event.

Computed tomography angiography (CTA) is considered the gold standard imaging modality for the diagnosis of AAD because of its non-invasive nature and its high sensitivity and specificity, both exceeding 95% [3]. However, technical acquisition failures, occasionally secondary to alterations in aortic flow, may lead to suboptimal intravascular contrast distribution, thereby hindering diagnosis. In this context, transthoracic echocardiography (TTE) is a harmless, accessible, and potentially decisive bedside tool for assessing valve disease and cardiac complications such as aortic regurgitation, hemopericardium, and ascending aortic dilatation [3, 5].

Regarding therapeutic management in full-term pregnant women with a viable fetus, urgent cesarean delivery followed by aortic repair is recommended [2]. Without surgery, maternal mortality increases by 1–2% per hour during the first day, reaching 50% within the first week and 80–90% at one month [1]. Contemporary series of pregnant women undergoing surgery report maternal mortality of 10–30% and fetal mortality of 15–35%, decreasing to 10–20% during the third trimester. Obstetric measures to minimize perioperative bleeding are recommended, as well as a multidisciplinary approach through a cardio-obstetric team or “pregnancy heart team” [2].

From a surgical perspective, bicuspid aortic valve disease is frequently associated with ascending aortopathy and requires specific risk stratification, particularly in women of childbearing age. Current guidelines recommend prophylactic replacement of the ascending aorta for diameters ≥ 50 mm, or ≥ 45 mm in the presence of additional risk factors or in women planning pregnancy, and systematically in the setting of acute dissection [3]. Particularly in AAD, surgical planning must address not only exclusion of the primary intimal tear and replacement of the dissected ascending aorta, but also the status of the aortic valve and root. In our patient, the presence of a bicuspid aortic valve with marked leaflet coaptation defect, the need for durable correction, and the absence of likelihood of future pregnancies supported mechanical valve replacement while preserving the aortic root, in accordance with an individualized assessment of anatomical findings, age, anticoagulation requirements, and reproductive considerations [2, 3].

We report the case of a 38-year-old woman at 40 weeks of gestation who initially presented with acute ischemic stroke in the context of AAD. The diagnosis was not initially established despite two CTA studies, both limited by suboptimal vascular opacification, but was ultimately made by bedside TTE. This case aims to illustrate the diagnostic challenge posed by AAD during pregnancy when the presentation is atypical, to highlight the potential limitations of CTA in complex hemodynamic settings, and to emphasize the importance of urgent coordinated management by a cardio-obstetric multidisciplinary team to optimize maternal-fetal outcomes.

CASE PRESENTATION

A 38-year-old primiparous woman at 40 weeks of gestation, with no known medical history, initially presented to the emergency department of another hospital with upper respiratory symptoms and productive cough, associated with dizziness, vomiting, and non-radiating left-sided chest pain with

pericarditic features, which resolved with conventional analgesia. The electrocardiogram (Fig. 1) and routine blood tests showed no relevant abnormalities, with normal high-sensitivity troponin. Several hours later, she developed right homonymous hemianopia with left hemiplegia and hemisensory loss. Cranial CTA suggested an acute ischemic stroke in the territory of the right posterior cerebral artery, also showing a dilated ascending aorta with suboptimal opacification. Given the persistence of the neurological deficit, she was transferred to our center for cerebral angiography and subsequent mechanical thrombectomy.

There, fetal viability was confirmed by ultrasound. A new CTA again failed to achieve adequate vascular opacification. Because of persistent neurological symptoms, femoral catheterization of the SAT was attempted, without adequate catheter advancement and with only partial opacification of these vessels. Bedside TTE was performed in the neurointerventional suite (Fig. 2, **Supp. video 1**), showing bicuspid aortic valve disease associated with AAD, with extension into the SAT and hemopericardium. The diagnosis was confirmed by a final aortic CTA with adequate contrast distribution, showing extension of the flap into the brachiocephalic trunk (BCT), occlusion of the right common carotid artery, and origin of the left subclavian and left common carotid arteries from the true lumen.

Given the diagnosis of AAD in a full-term pregnant woman with fetal viability, an urgent multidisciplinary meeting involving cardiac surgery, cardiology, neurology, gynecology, anesthesiology, and intensive care was held, and emergency cesarean delivery followed by aortic repair was agreed upon, with conservative management of the stroke. Carbetocin and oxytocin were administered, and a transverse segmental hysterotomy was performed, with delivery of a live newborn. To minimize the risk of bleeding before heparinization, meticulous hysterorrhaphy was performed, together with prophylactic uterine artery ligation using the Posadas technique, placement of a Bakri intrauterine balloon, vaginal packing, and abdominal compression bandaging.

Subsequently, left axillary arterial cannulation was performed, followed by median sternotomy with evacuation of the hemopericardium, cavoatrial venous cannulation, and initiation of cardiopulmonary bypass under moderate hypothermia at 26°C. After aortic cross-clamping, aortotomy was performed, confirming the origin of the primary intimal tear in the distal ascending aorta and a bicuspid aortic valve with a marked leaflet coaptation defect; therefore, the valve was replaced with a 21-mm St. Jude Regent mechanical prosthesis. The aortic root was preserved, and a 32-mm Hemashield vascular graft was anastomosed to the sinotubular junction and proximal aortic arch under selective cerebral perfusion through left common carotid artery cannulation, with a total circulatory arrest time of 33 minutes.

The postoperative course was favorable, allowing early extubation, drain removal, and withdrawal of vasoactive support. When the patient awoke 24 hours after surgery, persistent left hemiparesis was observed, with progressive partial recovery, although left hemisensory loss and left homonymous hemianopia also persisted. Postoperative TTE showed normal aortic prosthetic valve function and adequate biventricular function. Likewise, CTA (Fig. 3) showed patency of the supracoronary graft and persistent residual dissection of the aortic arch and BCT, with chronic right carotid occlusion and

established cerebral infarction in the territory of the right posterior cerebral artery, without hemorrhagic transformation or other associated complications. On postoperative day 5, after multidisciplinary assessment of the thrombotic and hemorrhagic balance, oral anticoagulation with acenocoumarol was initiated.

During the remainder of hospitalization, the newborn remained clinically stable and without complications. The mother received psychological support and multidisciplinary follow-up by the different specialists involved, with a favorable clinical course, and was discharged after 17 days of hospitalization. During subsequent outpatient follow-up, she remained asymptomatic from a cardiovascular standpoint after completing cardiac and neurological rehabilitation, with progressive functional recovery despite persistent residual left hemiparesis and hemianopia.

CONCLUSIONS

This case illustrates the diagnostic challenge posed by AAD during pregnancy, particularly when the initial manifestation is acute ischemic stroke and neurological symptoms predominate. Although CTA is considered the diagnostic gold standard, technically limited vascular opacification may prevent early diagnosis, especially in complex hemodynamic settings. In this scenario, bedside TTE can be decisive, particularly when findings such as bicuspid aortic valve disease, aortic regurgitation, hemopericardium, or ascending aortic dilatation are present.

The relevance of this case lies in the need to maintain a high index of clinical suspicion for AAD in pregnant patients with acute neurological symptoms, even when chest pain is absent, atypical, or transient. Early recognition is essential because diagnostic delay may compromise both maternal and fetal survival. Finally, this case emphasizes the importance of coordinated multidisciplinary management by a cardio-obstetric team, allowing individualized decision-making, appropriate sequencing of cesarean delivery and aortic repair, and careful balancing of neurological, surgical, obstetric, thrombotic, and hemorrhagic risks.

Abbreviations

AAD

Stanford type A acute aortic dissection

BCT

brachiocephalic trunk

CTA

computed tomography angiography

SAT

supra-aortic trunks

TTE

transthoracic echocardiography

Declarations

ETHICS APPROVAL AND CONSENT TO PARTICIPATE:

Ethics approval was not required for this anonymized single-patient case report, as all procedures described were performed as part of standard clinical care. Patient confidentiality was preserved in accordance with the ethical principles of the Declaration of Helsinki. The SAGER recommendations regarding potential sex- and gender-related bias were followed when applicable.

CONSENT FOR PUBLICATION:

Written informed consent was obtained from the patient for publication of this case report, including the accompanying anonymized clinical information, images, and supplementary video. Consent also covered publication of anonymized information regarding the pregnancy, delivery, and neonatal outcome.

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Figures

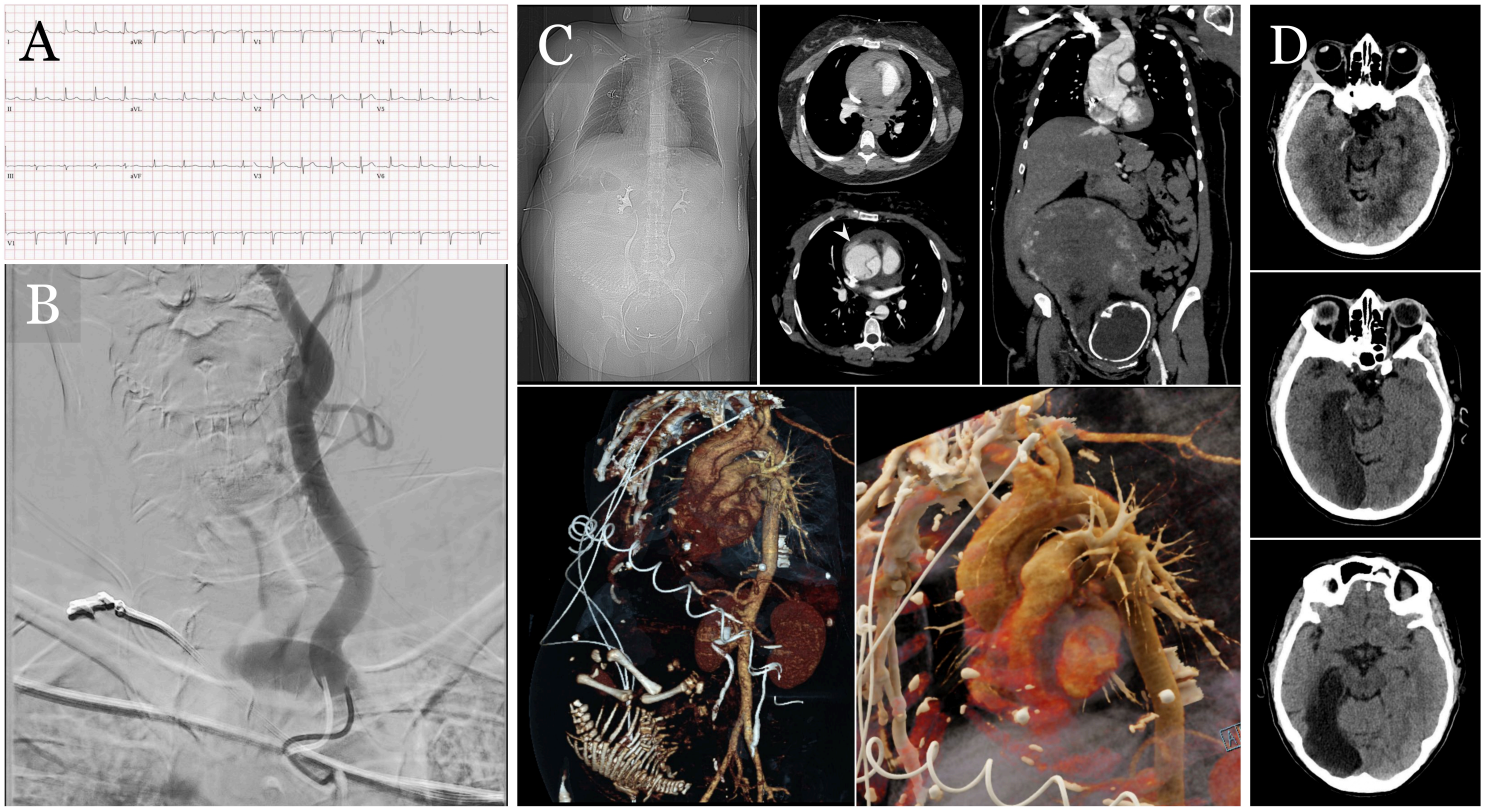


Figure 1

Initial electrocardiographic, angiographic, aortic, and cerebral imaging findings. (A) Electrocardiogram showing sinus tachycardia and low-voltage QRS complexes. (B) Femoral aortic catheterization showing absence of opacification of the BCT and proximal aortic arch. (C) Aortic CTA showing the 40-week fetus and a dissecting fusiform aneurysm of the aortic root and ascending aorta, measuring up to 54 mm, with contained aortic perforation into the anterior pericardial sac (arrow), hemopericardium, and extension of the intimal flap from its supracoronary origin to the aortic isthmus and into the BCT. (D) Cranial CTA at presentation, after 24 hours, and at 1 month, showing the evolution of the ischemic stroke in the territory of the right posterior cerebral artery.

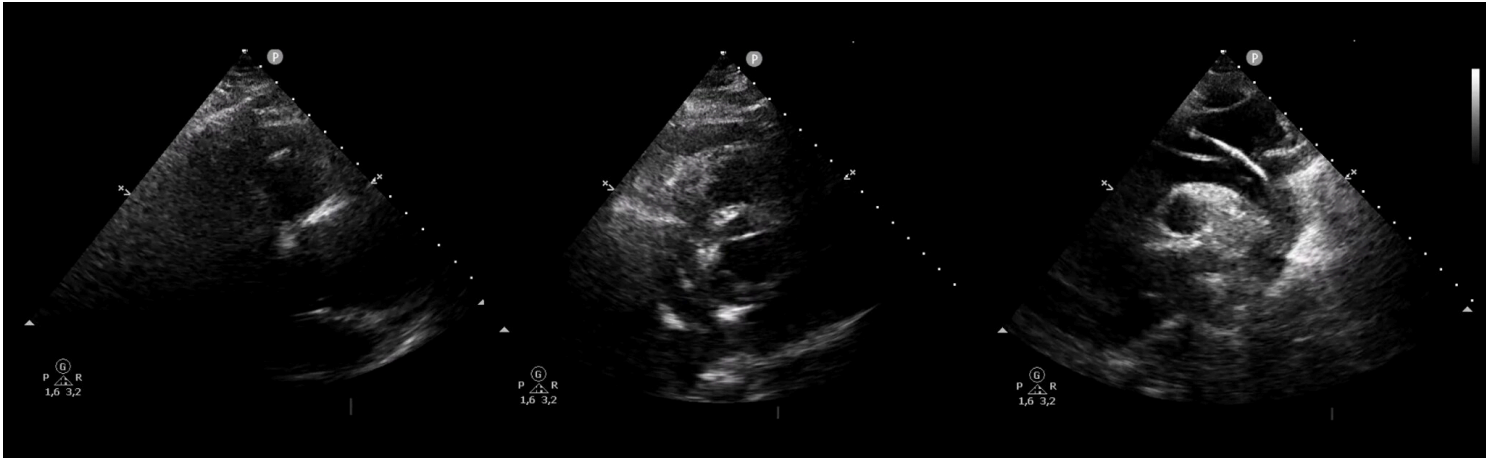


Figure 2

Bedside transthoracic echocardiographic diagnosis of Stanford AAD. TTE at presentation showing a type 1 bicuspid aortic valve, moderate pericardial effusion consistent with hemopericardium with partial collapse of the right-sided chambers, and a Stanford type A dissecting aneurysm with a pulsatile intimal flap extending into the BCT and crossed by the neurointerventional guidewire, which in turn advanced through the descending thoracic aorta.

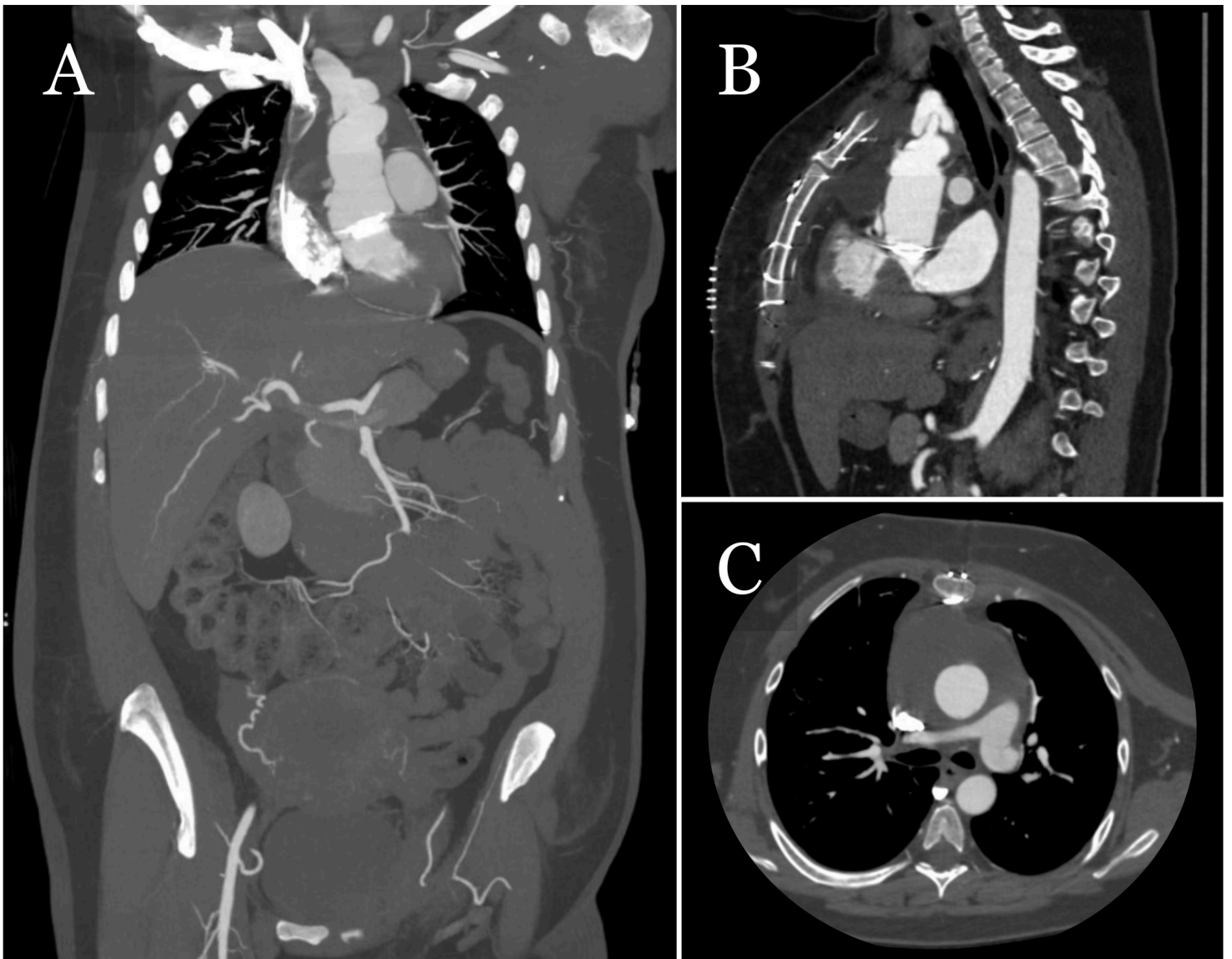


Figure 3

Postoperative aortic repair and residual dissection on CTA. Postoperative CTA showing aortic valve replacement with a No. 21 St. Jude mechanical prosthesis and ascending aortic replacement with a No. 32 Hemashield supracoronary graft, with a persistent residual dissection flap at the level of the aortic arch and BCT, as well as postoperative abdominal changes after cesarean delivery and uterine artery ligation. (B) Sagittal reconstruction showing the aortic graft and residual dissection flap extending into the BCT. (C) Axial view showing the aortic graft and dissection-free descending aorta.

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [Suppvideo1.mp4](#)