

## Background

It is estimated that the incidence of stroke in pregnancy is about 30 cases per 100,000 deliveries [1]. Reversible cerebral vasoconstriction syndrome (RCVS) is the most common cause of cerebrovascular events associated with pregnancy; however, there is a lack of guidelines for anesthetic management of peripartum stroke [2].

## Case

A 27-year-old G1P0 African American female with past medical history of asthma, obesity, and reflux presented for induction of labor at 37.1 weeks. The patient requested an epidural for labor analgesia. Initial aspiration of the catheter was negative for blood or cerebrospinal fluid. A 3mL test dose of 1.5% lidocaine with epinephrine indicated intrathecal placement of the catheter as the patient developed a T4 level, inability to move her lower extremities, and hypotension treated with phenylephrine. Afterwards, serial exams demonstrated return of muscle strength. Ninety minutes after the test dose, the patient had an episode of emesis followed by sudden onset of left arm and left leg weakness and severe headache. Afterwards, the patient began actively contracting, and a Cesarean section was performed using general endotracheal anesthesia. Postoperatively, she was transferred to the intensive care unit for management of her SAH. Cerebral angiography confirmed RCVS with vasospasm in multiple vessels. The patient was discharged home two weeks later with persistent yet improving left sided neurological deficits.

## Discussion:

Management of stroke is focused on maintenance of cerebral perfusion and treatment of the underlying etiology. For our case, Cesarean section was performed under general endotracheal anesthesia for rapidity of delivery and ability to tightly control blood pressure and cerebral perfusion. The priority of the anesthetic plan was maintaining systolic blood pressure less than 160 mmHg, and this entailed placing an arterial line prior to induction, administering remifentanyl on induction to attenuate response to intubation, and using phenylephrine, esmolol, and opioids to treat intraoperative hypo and hypertension. After delivery, workup of the patient's stroke included angiography which revealed that the patient's SAH was secondary to RCVS. The pathogenesis of RCVS is poorly understood; however, vasoactive drugs are known to trigger RCVS [3]. Consequently, it is possible that the epinephrine in the neuraxial test dose, the phenylephrine used to treat her hypotension, the increase in systemic and intracerebral pressure associated with the episode of emesis that preceded her neurological deficits, or a combination of the above exacerbated the RCVS and led to the SAH.

# Hemorrhagic Stroke in a Laboring Parturient Following Unintentional Placement of an Intrathecal Catheter

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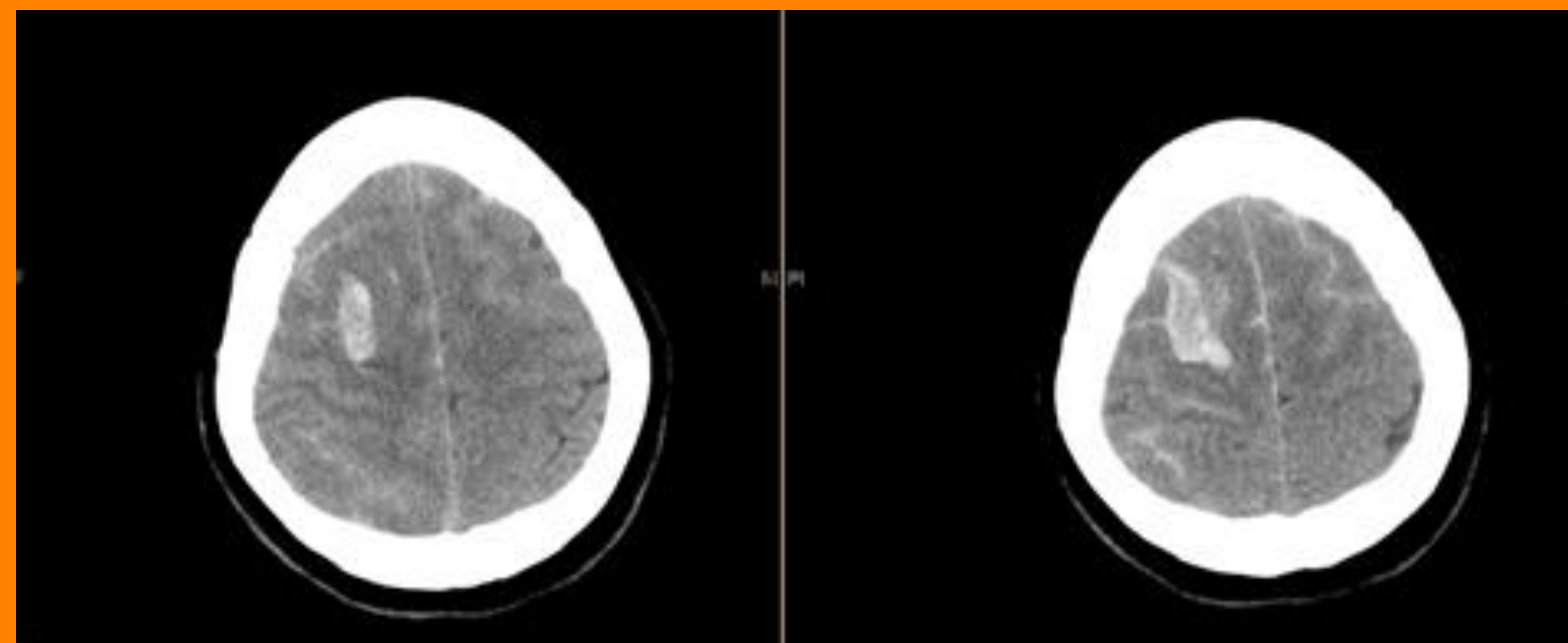


Figure 1: Patient's CT head demonstrating right frontal subarachnoid hemorrhage

## References

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## Stroke In Pregnancy

- Incidence of stroke in pregnancy is about 30 cases per 100,000 deliveries [1].
- Pregnant women have a higher risk of stroke than non-pregnant young adults.
- Stroke in pregnancy is more likely to be hemorrhagic than ischemic [4].
- CT head without contrast is still first line imaging even in pregnancy.
- Though there is limited data, IV thrombolysis is a potential option for treatment of stroke in pregnancy [5].
- Pregnancy alone is not a contraindication to mechanical thrombectomy [6].
- Management of hemorrhagic stroke is centered on controlling blood pressure and reversal of coagulopathy in order to prevent hematoma expansion or rebleeding.
- Endovascular and/or neurosurgical interventions for hemorrhagic stroke secondary to ruptured arteriovenous malformations (AVMs) or aneurysms should not be delayed in the pregnant patient [4].
- Delivery after pregnancy associated stroke should be guided by obstetric indications [4].

## RCVS

- RCVS is caused by dysfunctional vascular tone leading to vasospasm.
- The most common manifestation of RCVS is recurrent thunderclap headache.
- RCVS can lead to ischemic or hemorrhagic stroke.
- RCVS is more common in women than men.
- RCVS is associated with pregnancy, neurosurgery, and vasoactive drug use [7].
- Vasoconstriction leading to persistent headaches or neurological deficits can be treated with oral or intra-arterial calcium channel blockers, respectively.