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Case Report

Successful Management of Hemorrhagic Stroke in Pregnancy

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Abstract

Intracranial hemorrhage (ICH) is a rare but potentially serious complication of pregnancy which may lead to significant morbidity and mortality. It is challenging for the health care professional and has profound effect on young pregnant woman and their families. The incidence of stroke in young and middle-aged adults is increasing, with pregnancy-related stroke occurring in 30 in 100,000 pregnancies. Strokes are three times more common among pregnant than among nonpregnant women aged 14 - 44 years. Most strokes (90%) occur peripartum or in the 6 weeks following delivery [1]. Stroke in early antenatal period is extremely rare and large studies citing an incidence of stroke in antenatal period 1.5 per 100 1000 deliveries [2].

We present a case of 34-year woman into her third pregnancy, without remarkable past medical history or vascular risk factors who presented in second trimester with sudden onset worsening headache, nausea and vomiting. In addition to baseline blood investigations, Magnetic resonance imaging and Magnetic resonance venography were performed due to unusual presentation of headache. Results revealed a sizable lesion involving the temporo-parietal areas of the right cerebral hemisphere measuring 9.2 x 3.2 x 4.8 cm in its maximal anteroposterior, transverse and cephalocaudal dimensions respectively. In the T2 weighted series the lesion is heterogeneously hyperintense.

She subsequently diagnosed sub-acute intra cerebral hemorrhage hence, patient was referred to neurosurgical team to be admitted under their care. Neurosurgical team advise non-surgical approach under close neuro-observation for one week in hospital, EEG, anti-edema measures were done. She discharged after one week of stable course without surgical intervention and continued the pregnancy till term. She delivered at term by Cesarian section pertaining to history of Cesarian section in last two pregnancies.

Again, efficient and targeted history taking skills provide the best guidance towards specific investigation and early intervention which minimize delay resulted in positive maternal and neonatal outcome.

Keywords: *Hemorrhagic Stroke; Pregnancy; Central Nervous System; Cerebral Vein Thrombosis (CVT); Intracranial Hemorrhage (ICH)*

Introduction

Stroke is defined as a neurological deficit attributed to acute focal injury of the central nervous system by a vascular cause, including cerebral infarction, cerebral vein thrombosis (CVT), intracranial hemorrhage (ICH) and subarachnoid hemorrhage. It is the second leading cause of death and third leading cause of adult disability, with one in six people at risk of experiencing a stroke in their lifetime [3,4].

Management of a stroke during pregnancy remains a clinical challenge concerning the safety of both the mother and the unborn child [5].

Herein, we present clinical case of intracerebral hemorrhage in pregnant women who managed with non-surgical therapeutic approach and delivered at term.

Case Presentation

A 34-years-old female G3 P2 presented to emergency department at 19 weeks + 3 days gestation, complaining of right sided headache with nausea and vomiting for two days. The headache started suddenly and progressively worsen. Patient is describing the headache as a vague unilateral bounding pain, 8 out of 10 in severity and radiates from the front to the occiput on the right side. The pain is partially relieved by paracetamol. Headache was unprovoked related to light or sound stimuli. Also, she denies any aura symptoms.

She started getting vomiting with her headaches, vomits around 5 - 6 times per day, she describes it as regular force vomiting, not projectile, denies any blood in vomitus, she feels nauseated throughout the day. Upon presentation, she started developing some minor blurred vision, however, denied any sensory or motor changes in her face, upper limb or lower limb. Also, she does not report any gait abnormalities.

This was the first episode with such symptom. Her previous headache episodes were uncommon and were less in severity.

Pertaining to medical history, she is a known case of cervical disc protrusions at the level c4 - c7 for last two years with severe cervical spondylitis, for that she was regularly following with neurologist. She is asthmatic and was taking prednisolone tab 20 mg daily for six months which stopped soon after conception. At time of presentation, she was not on any medications except a pregnancy related vitamin. Surgical history remarkable of previous 2 cesarean sections. Does not take any regular over the counter or off the counter medicines. Family history includes hypertension on maternal side. Does not smoke, does not consume alcohol. Works as a nurse in a hospital.

Physical examination and neurological examination in ER were unremarkable, vitals were stable. Blood investigations showed hypokalemia (2.9 mmol/L) and urine investigations showed urine ketones 4. She was admitted under Obstetrics and Gynecology Department at Al-Qassimi Women and Children Hospital under the impression of late presentation of hyperemesis and to be furtherly investigated. Transabdominal scans were done to review fetal viability which showed viable fetus of 19 weeks. Rest of abdominal and pelvic ultrasound findings were unremarkable. She received, in hospital, fluids and electrolytes replacement, antiemetic and injectable paracetamol.

The day following admission, her vomiting and nausea are markedly reduced, her blood potassium improved, urine ketones improved, however, she was still complaining of the headache but lesser severity of 4/10 at pain scale. Second day following admission, she persistently complained of headache despite regular first line analgesia. Symptoms of nausea and vomiting were completely stopped. Decided to involve a neurologist to review the patient. Neurology examination were suggestive of lateral nystagmus on the right eye and nasal blockage. Advised for MRI/MRA brain and sinuses without contrast to rule out venous sinus thrombosis or sinusitis, also advised for ophthalmology review. Fundal examination of both eyes reveled a normal finding. The disk has sharp margins and is normal in color, with a small central cup. Arterioles and venules have normal color, sheen, and course the macula is enclosed by arching temporal vessels.

Magnetic resonance imaging and Magnetic resonance venography were performed due to unusual presentation of headache. Results revealed a sizable lesion involving the temporo-parietal areas of the right cerebral hemisphere measuring 9.2 x 3.2 x 4.8 cm in its maximal anterio-posterior, transverse and cephalocaudal dimensions respectively. In the T2 weighted series the lesion is heterogeneously hyper intense. Blood is also noted in the occipital horn of the right lateral ventricle. In T1-weighted series the liver shows a regular margin of high intensity signal and heterogeneously low intense core. Minimal perifocal Edema is noted. The lesion exerts minimal mass effect effacing the related cortical sulci and partially effacing the related right lateral ventricle. The major cisterns are normal. No midline shifts.

MRA shows elevation of right M1 and medial shift of Sylvian point. No obvious vascular malformation was noted. MRV also showed a

normal study. Both MRV and MRA excluded the findings of vascular aneurysm.

The diagnosis of sub-acute intra cerebral hemorrhage with minimal intra ventricular extension was made. Hence, patient was referred under neurosurgical team to be admitted under their care. Neurosurgical team preferred a non-surgical approach under close neuro-observation for one week in hospital. EEG, anti-edema measures, digital subtraction angiography were done and decided to repeat MRI in one week to note the progression of the lesson and plan accordingly. She was appropriately counselled for possible surgical evacuation any time if the symptoms worsen or overall condition deteriorates.

The EEG pattern reflected a focal subcortical lesion in right parietal region and the right mid and posterior temporal regions.

The patient completed one week of admission under neurosurgery care, with a very stable course, MRI was repeated at 7/10/2018 (one day prior to discharge) and showed no changes to the old MRI. So, a decision of discharge was made with close pregnancy supervision and close neurosurgery follow up. The patient and her family were explained about the radiological findings and possibility of underlying pathology. Potential complications including risk of rebleed and current line of conservative management explained in view of pregnancy. Possibility of surgical intervention briefed to patient and family with potential risks involved in details.

On discharge, the patient was asymptomatic, conscious, oriented, communicating well, Pupils equal and reacting to light, Extraocular movement (EOM) - full, no facial weakness, no apparent neurological deficits and self-ambulant.

Discussion

Intracranial hemorrhage (ICH) is a rare occurring in 1.5 in 100,000 deliveries and extremely rare in first and second trimester of pregnancy [2]. Risk of hemorrhage increases during the third trimester and is greatest during parturition and the puerperium. Irrespective of gestational age, event associated with serious maternal mortality and morbidity and substantial risk to unborn child.

Intracranial hemorrhage may be classified anatomically as extradural, subdural, subarachnoid or intracerebral. Extradural and subdural hemorrhages are usually related to trauma, as are some intracerebral hemorrhages. Spontaneous SAH is usually caused by aneurysmal rupture. Spontaneous intracerebral hemorrhage in obstetric patients is most often caused by arterio-venous malformation, hypertension or venous occlusion.

Evaluation and treatment of stroke during pregnancy should be the same as in the nonpregnant state [7,8]. A targeted history of time of onset, symptoms and premorbid status, along with potential contraindications to thrombolysis should be taken.

Stroke presents with rapidly developing symptoms, with signs of focal cerebral loss of function and no cause other than that of a vascular origin is identifies and include cerebral infarction, intracerebral hemorrhage and subarachnoid hemorrhage.

The symptoms and signs relate to the affected area of the brain (Figure 1). It is extremely important to obtain relevant, targeted history from the patient or witness to identify the timing, onset, severity and nature of symptoms. Our patient presented with unilateral worsening headache of two days with nausea and vomiting and minor blurring of vision. Her past obstetric history and past medical history was unremarkable of hypertension, vascular disease, thrombophilia risk or Preeclampsia. There were no foal neurological signs noted on examination. This history can be simply taken as pregnancy associated changes or migraine.

Keeping in mind the onset, most likely is sudden with focal symptoms and clinical deficits conforming to a vascular territory. Patient can present with unilateral weakness or numbness of arm, face or legs, dysphasia, hemianopia and cerebellar features, such as dysarthria and ataxia. Non focal symptoms including generalized weakness, light-headedness, brief loss of consciousness, sensory loss, urinary or fecal incontinence, confusion and tinnitus - are less likely to be caused by a stroke. However, Central venous thrombosis (CVT) can be vari-

able in its clinical presentation, with only 40% of patients presenting with typical stroke symptoms and signs. It is often associated with a headache; drowsiness or confusion can also occur with deep vein occlusion of the thalamus [9].

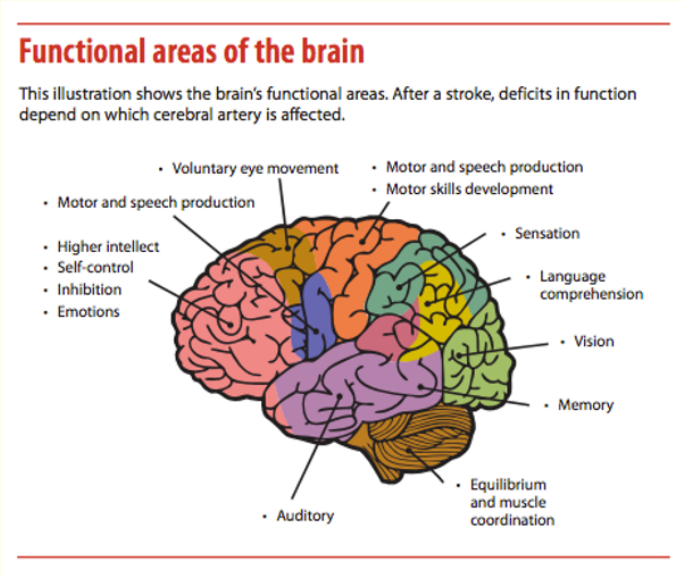

Figure 1

Management

Clinical approach, assessment and investigation for pregnant woman, presented with suspected stroke is not different form non pregnant woman. After initial stability, the first priority is the evacuation of any hemorrhage causing critical mass effect; the next priority is to investigate by appropriate imaging facilities and address the underlying cause of the hemorrhage such as aneurysm or AVM (arterial-venous malformation). Next measure is to prevent recurrence. Management of these patient should take place in a facility with available neurosurgical, radiological and obstetric expertise. Timely involvement of neurosurgical/stroke team and brain imaging is important to optimize long-term outcome.

The multidisciplinary care provided in a stroke unit does produce better outcomes for the rehabilitation phase after stroke, so where possible patients should be managed in such units after the acute phase has resolved [10].

Conclusion

Headache in pregnancy is a very common symptom and majority of headaches are related to physiological changes of pregnancy, however, serous lethal causes can be identified with appropriate information gathering, onset and course of symptoms, timely imaging and involvement of neurosurgical team for successful maternal and fetal outcome.

Our case report represents a woman with atypical presentation of intracerebral hemorrhage without prior remarkable history and without focal neurological signs. She presented with nausea, vomiting and headache with ketonuria, considering her gestation age of only 19 weeks, it could have been simply misled with pregnancy associated symptoms, late onset hyperemesis or Migraine. The intracerebral hemorrhage event was unprovoked by hypertension, trauma or early onset preeclampsia or Eclampsia. MRI was showing sizable lesion

involving the temporo-parietal areas of the right cerebral hemisphere measuring 9.2 x 3.2 x 4.8. MRA does not show any obvious vascular malformation. MRV also reported normal.

She was successfully managed by neurosurgical, obstetric team and responded very well with conservative non-surgical therapeutic approaches. Follow up imaging was non progressive and she discharged in 7 days period with hemodynamic stability, fully conscious and oriented with viable 20 plus week fetus.

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