Case Report

ISCHAEMIC STROKE IN THE SECOND TRIMESTER OF PREGNANCY: A CASE REPORT AND LITERATURE REVIEW

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ABSTRACT

Stroke in pregnancy may cause substantial risks and effects to the mother and foetus. Pregnancy related ischaemic stroke following arterial occlusion had been reported to be more common compared to pregnancy associated haemorrhagic stroke. Various underlying conditions and factors may contribute towards the risk of developing ischaemic stroke in pregnancy. Inevitably, ischaemic stroke in pregnancy would have a significant impact on the antenatal and obstetric care of the patients. We present a case report to illustrate a rare case of ischaemic stroke occurring in the second trimester of pregnancy. A 36 years old lady, gravida 3 para 2 with no comorbidities was diagnosed with left middle cerebral artery infarction at 16 weeks period of amenorrhea which was relatively early compared to the usual presentation of ischaemic stroke at third trimester or postpartum. Investigations to ascertain the possible underlying causes and associated risk factors did not reveal any significant findings. She was prescribed with aspirin until 38 weeks period of gestation with no bleeding complication reported.

Keywords: *Ischaemic stroke, second trimester, pregnancy*

Introduction

Stroke in pregnancy represent not only an important obstetric issue but also a primary care concern because of substantial risks and effects to the mother and foetus. It has been recognised that there is an increased risk of developing stroke during pregnancy and the postpartum period. Pregnancy-related stroke may be associated with significant morbidity and even mortality[1]. Additionally, women over the age of 35 years have an increased risk of pregnancy-related stroke[2]. Generally, stroke or cerebrovascular event can be broadly divided into non-haemorrhagic or ischaemic and haemorrhagic types.

Ischaemic stroke in pregnancy and puerperium denotes a rare occurrence but it may be a serious and stressful event affecting mothers, infants and families besides its association with several consequences in the obstetric care[2,3]. The incidence of ischaemic stroke in pregnancy varies widely as reported by various community-based and institutional-based studies. The incidence ranges between 4 and 11 cases per 100 000 deliveries if considering only population-based data[3]. Among non-haemorrhagic strokes, the commonly reported underlying subtypes are arterial thromboembolism and cerebral venous sinus thrombosis[4].

Case Presentation

A 36 years Malay old lady, gravida 3 para 2 with no underlying medical illness and comorbidities was diagnosed with ischaemic stroke at 16 weeks period of amenorrhea. She had previously uncomplicated obstetric history and unremarkable gynaecological history. She has two sons delivered through normal spontaneous vaginal delivery and her last child birth was 9 years ago. She works as a teacher in a secondary school.

She attended booking in June 2015 at 8 weeks and 4 days period of amenorrhea. Her booking weight was 90 kg and height was 165 cm with BMI 33.05kg/m^2. Examinations revealed blood pressure of 110/70 mmHg and pulse rate of 72 beats per minute. Her haemoglobin level was within normal range, while urine analysis was negative for albumin and sugar. Ultrasound showed single foetal-echo corresponding to 8 weeks period of gestation. Glucose tolerance test done a month later also showed normal fasting blood sugar level (5.2 mmol/L) and 2-hours post prandial sugar level (6.0 mmol/L) respectively.

She came for her regular antenatal clinic review on 5/8/2015. She complained of generalised headache which she had attributed to work related stress and lack of sleep.

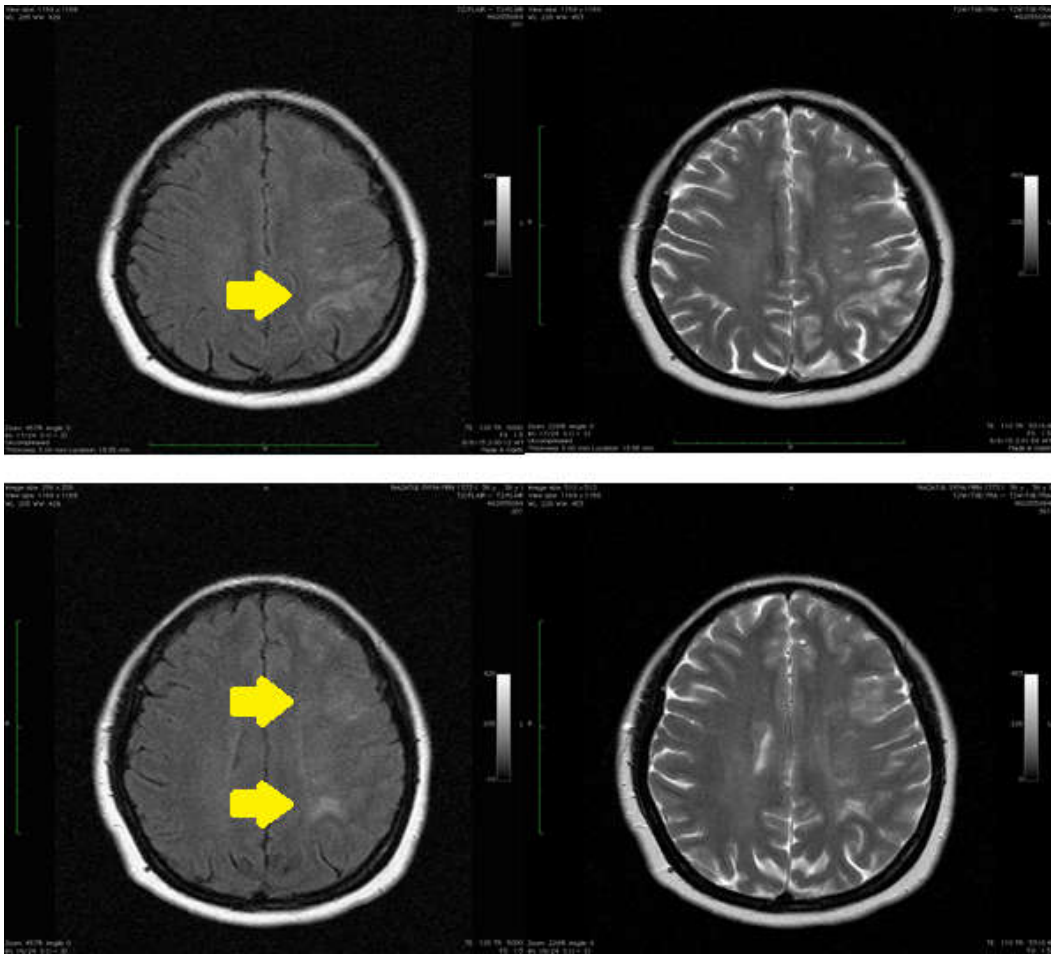

Figure 1: Brain MRI images showed findings suggestive of left MCA territory infarction.

She has no other neurological symptoms and no symptoms of impending eclampsia. She was afebrile and her blood pressure was 125/70 mmHg with pulse rate of 80 beats per minute. Urine analysis was normal. However, she presented on 8/8/2015 at 16 weeks of pregnancy to the emergency department with right sided body weakness and expressive aphasia. Her blood pressure was noted within the normal range and other systemic examinations were unremarkable.

Brain MRI revealed findings suggestive of left middle cerebral artery (MCA) territory infarction (Figure 1). She was then admitted to the neurology ward and being further investigated for the possible associated causes of stroke in pregnancy. Blood investigations for connective tissue disease screening showed rheumatoid factors were not detected and negative for anti-nuclear antibodies. The complement proteins C3 and C4 levels were 1.49 g/L and 0.41 g/L respectively. Echocardiogram demonstrated normal cardiac function with no significant valvular abnormalities. She was started on Tab. Aspirin 150 mg daily and allowed for home discharge on 13/8/2015.

Subsequent antenatal health clinic reviews showed satisfactory pregnancy progress and foetal parameters on ultrasound. She also attended the obstetric and neurology clinic follow up. She continued to show good recovery with improvement in speech and muscle power. There were no new symptoms or signs of stroke. Her blood pressure readings and urine analysis results were within the normal range. Second glucose tolerance test done in October 2015 also revealed normal results. Antenatal examination at 33 weeks of gestation period in early December 2015 showed the symphysio-fundal height was at 32 cm and a singleton foetus with heart rate of 152 beats per minute as well as adequate foetal movement. Aspirin was continued until 38 weeks POG with no reported bleeding complication.

Discussion

Stroke patients may present with varying degree of neurological symptoms and signs attributed to those of upper motor neuron lesion. Brain imaging is vital in the diagnosis and assessment of stroke and when available MRI remains the preferred option in pregnancy compared to CT scan of the brain[2]. Apart from undergoing neuroimaging studies, patients would also be investigated for the underlying causes of stroke including cardiac diseases, lupus and coagulopathy. Prior data showed mixed outcome and prognosis following

pregnancy-associated stroke. Although some studies had described no maternal deaths[1,5], other studies had reported maternal and foetal mortality as well as residual neurological deficit[3].

Physiological adaptations in the cardiovascular system and coagulability that accompany pregnancy, which are more significant around the delivery and in the postpartum period, are likely to contribute towards increasing the risk of an ischaemic stroke[3]. Majority of pregnancy-associated stoke were arterial occlusions whereby most cases presented during the third trimester and puerperium[1]. The risk of pregnancy-related ischaemic events is demonstrated to be influenced by ethnicity with African American shown to have significantly higher risk than Caucasians[2]. Ischaemic stroke in pregnancy has also been reported to be associated with younger maternal age[3,5].

The commonly highlighted risk factors and conditions associated with stroke in pregnancy are hypertension, diabetes, obesity, valvular heart disease, hypercoagulable disorders, sickle cell disease, lupus, migraine and lifestyle factors such as alcohol, smoking and substance abuse[2,3,4]. Apart from that, specific conditions related to pregnancies also may need to be considered such as (a) preeclampsia-eclampsia (b) peripartum cardiomyopathy associated thromboembolisation, (c) amniotic fluid embolism, (d) choriocarcinoma associated trophoblastic cerebrovascular embolism or thrombotic process and (e) post-partum cerebral angiopathy associated reversible vasoconstriction as well as (f) caesarean delivery[3,4,6].

Preeclampsia and eclampsia would certainly be the most important conditions being extensively described in the literature. Jaigobin and Silver[1] had considered preeclampsia and eclampsia as risk factors rather than aetiologic factors in pregnancy-related stroke. The proportion of patients with pregnancy associated stroke that have pre-eclampsia or eclampsia is estimated between 25% and 45%[2]. Endothelial dysfunction and impaired cerebral autoregulation as well as severe hypertension in the setting of preeclampsia are likely the cause of many strokes during pregnancy[7]. Moreover, preeclampsia and stroke are significantly related pathologically and temporally in women whereby cerebrovascular events may complicate preeclampsia and also manifest later in life[7].

Treatment option of ischaemic stroke is rather restricted due to the potential risks including foetal toxicity and possible therapy complications such as bleeding[6]. Available evidence suggested that antiplatelet therapy with low-dose aspirin (<150 mg/d) could be used safely during the second and third trimester[3]. In some circumstances, patients such as those with prosthetic cardiac valve or known thrombophilic tendency would require anticoagulant therapy during pregnancy[2]. Unfractionated heparin and low molecular weight heparin (LMWH) are used in pregnancy with LMWH appears to be the preferred option[2,3]. In contrast, there is no data available on the use of thrombolysis in pregnancy and puerperium as these conditions are regarded as exclusion criteria in clinical trial[3].

In this case report, the patient was diagnosed with ischaemic stroke involving the left MCA territory during the second trimester which was relatively early compared to the usual presentation at third trimester or postpartum. Accordingly, investigations done to ascertain the possible underlying causes and risk factors had not revealed any significant findings. There were also no clinical findings or parameters to suggest preeclampsia and her blood pressure readings remained within the normal range. She was prescribed with aspirin as antiplatelet therapy until 38 weeks period of gestation and there was no bleeding complication reported.

Conclusion

Pregnancy associated ischaemic stroke would definitely influence the antenatal and obstetric care of the patients. Although the occurrence of pregnancy-related ischaemic stroke especially in the second trimester is fairly rare, various conditions associated with pregnancy and underlying risk factors predispose it. Thus, attention should be given especially to those patients with high possibility in developing this illness.

References

1. Jaigobin C and Silver FL (2000). Stroke and pregnancy. Stroke 31:2948-2951
2. Davie CA and O'Brien P (2008). Stroke and pregnancy. J Neurol Neurosurg Psychiatry 79:240-245.
3. Del Zotto E, et al (2011). Ischaemic stroke during pregnancy and puerperium. Stroke Research and Treatment 1-13. doi:10.4061/2011/606780
4. Tate J and Bushnell C (2011). Pregnancy and stroke risk in women. Women's Health (Lond Engl) 7(3):363-374
5. Sharshar T, Lamy C and Mas JL (1995). Incidence and causes of strokes associated with pregnancy and puerperium: A study in public hospitals of Ile de France. Stroke 26:930-936
6. Basri H et al (2012). Clinical Practice Guidelines Management of Ischaemic Stroke. Second Edition. Ministry of Health Malaysia, Academy of Medicine Malaysia and Malaysian Society of Neurosciences.
7. Bushnell C and Chireau M (2011). Preeclampsia and stroke: Risks during and after pregnancy. Stroke Research and Treatment 1-9. doi:10.4061/2011/858134

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