

Cerebrovascular Disorders during Pregnancy

Dear Editor,

We read the manuscript entitled “Spectrum of Neurological Complications of Pregnancy on Magnetic Resonance Imaging” on the esteemed “Matrix Science Medica” with great interest.^[1] Posh *et al.* assessed the role of neuroimaging in neurological complications of pregnancy. The authors found that posterior reversible encephalopathy syndrome and cerebral venous thrombosis are responsible for more than 60% of the cases. Furthermore, they stated that magnetic resonance imaging is essential for promptly diagnosing possible neurological complications without risking fetal safety.

Neurological disorders during pregnancy are challenging to manage [Table 1]. Many neurologic diseases and their treatments can affect pregnancy, labor, and delivery. Herein, we would like to discuss some cerebrovascular neurological disorders encountered during pregnancy. Neurological disorders can occur during all three trimesters of pregnancy and can arise due to specific changes in each trimester.

During pregnancy, there are physiological changes to ensure adequate plasma volume expansion and perfusion of vital organs. The fluctuations of estrogen and progesterone could contribute to a hypercoagulable state. Furthermore, some patients can develop a higher total peripheral resistance in the blood flow, leading to arterial contraction and decreased blood flow to many organs. Moreover, pregnancy can reduce high-density lipoprotein and apolipoproteins A and B, causing atherosclerosis and increasing the risk of stroke.^[2] In this way, the physiological alterations during pregnancy could contribute to cerebrovascular disorders due to changes in cardiovascular hemodynamics, coagulation factors, endothelial dysfunction, and impaired cerebrovascular tone.

Pregnant women have a higher incidence of stroke (30/100,000 pregnancies) than their nonpregnant counterparts. The third trimester is associated with the highest risk, marked by an increase in the relative risk and a slight increase in the absolute risk of stroke. It is worth mentioning that most strokes occur during delivery (40%) and the immediate postpartum period (50%), and only 10% occur in the antepartum period.^[3] Interestingly, the incidence of vascular complications varies during the three trimesters of pregnancy. Usually, arterial-venous malformations occur early in pregnancy. On the other hand, cerebral vein thrombosis and aneurysm rupture occur later in pregnancy.

All types of stroke can occur during pregnancy. However, the physiological changes of pregnancy play an essential role in the etiology of stroke in this subgroup of individuals. In

Table 1: Neurological complications during pregnancy

Condition	Comments
Brain tumors	The incidence of brain neoplasms does not increase during pregnancy, and the types of tumors are similar to those seen in nonpregnant women of the same age
Cerebrovascular disease	Pregnancy and the postpartum period are associated with a marked increase in the relative risk and a small increase in the absolute risk of stroke
Headache	A patient with a prior history of headache may continue to experience headaches during pregnancy. Challenging treatment
Low back pain and disc disease	Almost half of pregnant women will experience back pain
Movement disorders	Chorea gravidarum and restless legs syndrome
Multiple sclerosis	Maternal multiple sclerosis does not increase the risk of pregnancy complications or fetal anomalies
Muscle disease	Pregnancy may influence the course of muscle disease
Myasthenia gravis	Pregnancy has a variable effect on the course of myasthenia gravis
Neuropathy	Bell's palsy, carpal tunnel syndrome, meralgia paresthetica, and postpartum compression neuropathies
Seizure and epilepsy	Potential perinatal complications, seizure worsening, and adverse effects of antiseizure medications on the fetus and later development
Spinal cord injury	Spinal cord lesions from T5 to T10 may have painless labor. Patients with lesions above T5–6 may be prone to autonomic dysreflexia
Ventriculoperitoneal shunt	Shunt malfunction complicates almost half of the pregnancies in women with ventriculoperitoneal shunts

this context, the most common causes of ischemic stroke are cerebral venous sinus thrombosis, preeclampsia/eclampsia, and cardiogenic embolism. However, the hemorrhagic source is more common due to preeclampsia/eclampsia, arteriovenous malformations, and aneurysms.^[4]

The recurrence rate of stroke in future pregnancies is low, but data are scarce in the literature. This low risk of recurrence is believed to be related to the correction of previously causative vascular lesions.^[5] Furthermore, some authors state that a previous ischemic stroke is not a contraindication to a subsequent pregnancy.

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Conflicts of interest

There are no conflicts of interest.

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