

A Prospective Study of Neurological Disorders during Pregnancy and Puerperium in a Tertiary Care Center

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Abstract: ***Introduction:** Many neurological diseases are common in pregnancy and postpartum period. **Material and methods:** Data were collected for all pregnant patients coming for antenatal checkup or admitted for delivery in Nalanda Medical College Hospital between May 2016 to April 2017. **Results:** 4200 patients were registered for the study and neurological disorder were present in 344 patients (4.28%). Headache and seizure were the commonest neurological disorders. **Conclusion:** Neurological presentations vary widely during peripartum period. We should have a high index of suspicion for neurological disorders in pregnancy as early diagnosis and treatment is rewarding in many cases.*

Keywords: Pregnancy; Puerperium; Seizure; Headache; Neurological disorders

1. Introduction

Acute neurological diseases requiring hospitalization are relatively rare in women of childbearing age. However, during pregnancy and the postpartum period, several diseases increase in prevalence. Neurological complications that frequently occurs in pregnancy and peripartum period includes headache, seizure, cerebral venous sinus thrombosis, ischemic stroke, intracranial hemorrhage, hepatic encephalopathy and CNS infection. CVST is a common complication during pregnancy and peripartum period and can present with seizure, features of raised intracranial pressure like headache and vomiting, encephalopathy and with focal neurological deficit. Patients with a known case of seizure disorder may have increased frequency of breakthrough seizures during pregnancy. Other cause may be drug default during pregnancy thinking of teratogenicity. Risk of ischemic stroke is also increased during pregnancy. Acute hepatitis E infection can have fulminant course and bad prognosis in pregnancy.

2. Material and Methods

Data were collected for all pregnant patients coming for antenatal checkup or admitted for delivery in Nalanda Medical College Hospital between May 2016 to April 2017. 4200 patients were registered for the study and neurological disorders were present in 344 patients (4.28%). Patients developing neurological complications or complains for which neurological consultation was sought were noted. Their age, parity, demographic profile, significant past history, use of oral contraceptive pills or past history of deep vein thrombosis were noted. Cases of eclampsia were excluded. Detailed history and examination including obstetric examination were carried out. Besides routine investigations (complete blood count, liver and kidney function tests, serum electrolytes), radiological investigations like CT scan, MRI brain, MR angiography, MR venography, EEG, were done to establish diagnosis. All patients were followed up for minimum of 6 weeks to know the outcome of the neurological disorder as well as the outcome of pregnancy following delivery.

3. Results

The mean age of patients having neurological complains were 22.5±9.5 years. Neurological complications occurred more in primigravida (65%) than multigravida (35%). 1 patient of acute hepatitis E with hepatic encephalopathy expired. Neurological disorders were present in 344 patients (4.28%). The frequency of various neurological disorders during pregnancy and peripartum period is shown in Table 1.

A past history of headache (migraine, tension type headache, unspecified) was present in 300 patients but 180 patients had increased frequency and severity in pregnancy and peripartum period. Out of 180 patients, 102 patients were having migraine like headache which increased in frequency and needed treatment.

Seizure was present in 25 patients. Seizures were focal in 4 patients, focal onset with secondary generalization in 10 and generalized in 11 patients. The details of patients presenting with Epilepsy are shown in Table 2. Out of 25 patients, 12 had no abnormality on radiological imaging and 9 had a single granuloma (most commonly in the parietal lobe). Other findings on imaging included infarct (2), gliosis (1) and hemorrhage (1). Seizures were controlled in 24 cases but in 1 case it was refractory to treatment. Among the 25 patients with epilepsy during pregnancy; 19 had uncomplicated deliveries, three patients underwent MTP because of risk of teratogenicity, two had a spontaneous abortion at 24 weeks and one had a term still-birth. Congenital malformations were not seen in any neonate.

4 patients were diagnosed with cerebral venous sinus thrombosis. Out of four, 2 patients presented with headache, vomiting and seizure. One patient presented with monoparesis and encephalopathy and one patient presented with hemiparesis. All four patients were treated with low molecular weight heparin and have no adverse perinatal outcome.

2 patients were diagnosed with chronic meningitis and were given antitubercular treatment. In one patient, there was still birth at term and one underwent MTP.

1 patient developed pyogenic meningitis which was treated with antibiotics with normal perinatal outcome. 2 patients developed unspecified meningoencephalitis, patient survived but with focal deficit and cognitive impairment. One patient underwent MTP and another one has still birth at term.

Acute Hepatitis E infection with jaundice and hepatic encephalopathy was present in 1 patient which was treated conservatively. One patient expired at 7th month of pregnancy but second patient improved but there was intrauterine fetal death. Infarction was present in 2 patients and it was venous infarct (hemorrhagic infarction). Small intracranial bleed developed in two patients after delivery but no cause could be identified. Both patients survived. Cerebral malaria and dengue fever with encephalopathy was diagnosed in 2 patients each; all patients survived with normal perinatal outcome. 1 patient developed Bell's palsy which improved completely in 2 month period.

4. Discussion

A wide variety of neurological disorders can affect women during peripartum period [1,2]. Headache followed by seizure were the most common neurological symptoms in the present study. A headache is the most common symptom of neurological conditions, and therefore, it is necessary to distinguish benign headache from headache due to complications in pregnancy. In our study, past history of headache was present in 300 patients but 180 patients had increased frequency and severity which needed treatment. Out of 180 patients, 102 patients were having migraine like headache. In our study, 25 patients had seizure. Seizures were more common in first and second trimester. This was in accordance to other studies in which the seizure frequency was found to be least during the third trimester and postpartum period[3,4]. Most seizures in our study were due to drug default, noncompliance or metabolic derangements. Seizures frequency increased in some patients on regular antiepileptic drugs; this may be due to fact that seizure frequency may change during pregnancy due to lack of alterations in the doses of antiepileptic drugs and due to changes in antiepileptic drug binding protein [5]. The distribution of type of seizures (generalized vs. partial) was similar to other studies[6,7].

Both arterial and venous stroke can occur in pregnancy and peripartum period. Cerebral venous sinus thrombosis (CVST) constitutes 0.1% of total strokes with a difference in its etiology, demography, evaluation, clinical presentation and outcome. Cerebral venous sinus thrombosis should be suspected in relevant clinical situation because it is easier to diagnose and rewarding to treat. The prevalence of CVST has been reported to be higher in puerperium in the developing countries especially in India and Pakistan [8,9]. The presenting syndromes of CVST could be categorized as 1) raised intracranial pressure, 2) encephalopathy, 3) stroke like illness and 4) isolated headache [10]. Mortality related to CVT is estimated at 9% and is primarily due to intracerebral hemorrhage [11]. The development of CVT has

been related to a number of factors including hypercoaguable states, inflammatory disorders, and infection. Pregnancy in itself is a prothrombotic condition and is a strong risk factor for CVST. In our study, 4 patient were diagnosed with CVST. Out of four, 2 patients presented with headache, vomiting and seizure. One patient presented with monoparesis and encephalopathy and one patient presented with hemiparesis. They were diagnosed early and started on low molecular weight heparin. All patients survived and had good outcome.

CNS infections like pyogenic meningitis, tuberculous meningitis, and meningoencephalitis may all occur in pregnancy incidentally but has adverse perinatal outcome. Bell's palsy (3) has 6 times common in pregnant women compared to non-pregnant; it is more common in 3rd trimester and puerperium [12,13,14].

5. Conclusion

Neurological presentations vary widely during peripartum period. Headache and seizures are the commonest neurological disorder in pregnancy and puerperium period. We should have a high index of suspicion for neurological disorders in pregnancy as early diagnosis and treatment is rewarding in many cases.

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Table 1: Table showing the neurological disorders and their frequency in pregnancy and peripartum period

Neurological disorder	Number of patients
Headache	180
Seizure	25
Intracranial bleed	2
Infarction	2
Cerebral venous sinus thrombosis	4
Hepatic encephalopathy	1
Tubercular meningitis	2
Pyogenic meningitis	1
Unspecified meningoencephalitis	2
Dengue fever with encephalopathy	2
Cerebral malaria	2
Bell's palsy	1
Intracranial bleed	2

Table 2: Details of seizures in pregnancy and peripartum period

Seizure characteristic	Number of patients
Timing	
1 st trimester	10
2 nd trimester	7
3 rd trimester	4
Postpartum	4
Type of seizure	
Focal	4
Secondary generalized	10
Generalized	11
New onset seizure	5
Recurrence during pregnancy	20
Number of AED needed to treat seizure (median)	2
Refractory seizure	1