



NEUROLOGICAL DISORDERS IN PREGNANCY AND POSTPARTUM PERIOD: AN INSTITUTIONAL EXPERIENCE

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ABSTRACT

Neurological disorders contribute significantly, if they are present in pregnancy and postpartum period. They not only affect maternal mortality but also affect infant mortality rate. We had conducted prospective study for 02 years to know epidemiology of different neurological disease in this period and their presentation, imaging features and outcome.

KEYWORDS : Epilepsy, Pregnancy, Puerperium, Postpartum, Neurological disorders

INTRODUCTION-

Neurological disorders during pregnancy or postpartum period are very important as they not affect maternal mortality rate¹ but also infant mortality rate. Neurological disorders may be present before pregnancy and they may appear during this period but in some cases neurological disorders are seen at the first time in pregnancy. Management of these neurological disorders is always challenging to physicians, neurologist, and obstreicians that means it is multifaceted task to identify early clinical features related to neurological disorders and their management with precise way. This neurological disease may be exacerbation of preexisting neurologic disorders or may be because of other systemic diseases. As we know there are various anatomical, systemic and hormonal changes that occur during pregnancy. All theses neurological diseases may be categorized into primary and secondary neurological disorders, depending whether primarily brain is affected or neurological symptoms are because of other systemic diseases. Primary neurological diseases are epilepsy, nerve neuropathies which may be compressive or non compressive, cerebrovascular accidents, infections or neoplasm etc².Epilepsy is the most common neurological disorder in this period. Cerebral vascular accidents are followed by this disease. Cerebral vascular accidents is a group of disorder divided into ischemic, hemorrhagic, subarachnoid hemorrhages and cortical venous thrombosis. These Secondary neurological disorders are hypoxic, septic, hepatic or uremic encephalopathies etc.

Common clinical manifestations of neurological disorders in pregnancy and postpartum period are similar to non pregnant status also, like severe headache, altered sensorium or loss of consciousness, monoparesis to hemiplegic, seizures disorders, cranial nerves palsy and various other neurological deficits³. As neurological diseases contribute to approximately 20% of maternal deaths¹, early diagnosis of these neurological disorders in this period by the help of different investigational tools like NCCT head, MRI brain, MR venogram is boon to these patients.

This study was undertaken to analyze epidemiology of neurological disorders in pregnancy and postpartum and their outcome in terms of maternal and infant mortality rate.

MATERIAL AND METHODS –

This was hospital based prospective study conducted in department of obstetrics and gynecology and department of neurosurgery, MLB medical College Jhansi a tertiary care center for a duration of 02 years from June 2020 to June 2022. All cases of neurological disorders with pregnancies irrespective

of their gravida, preexisting neurological diseases, duration of gestation, or pregnancy outcome, were included in this study.

Total patient was admitted for delivery were 5690, out of which 102 patients had neurological disorders and were willing to participate in this study, were included in this study.

All subjects who were included in this study were informed and written and informed consent was taken. Their details were recorded on proforma with clinical features, neurological examination, and obstetric examination. All patients were investigated with routine CBC, KFT, LFT, RBS and radiological investigations that is NCCT Head or MRI Brain, MR Venogram, MR Angiogram. NCV, EEG was done as per requirement.

RESULTS –

All patients were divided into primigravida or multipara. They were grouped with different age group. Their co morbidity were recorded and also clinical features which were found at presentation. They were also divided into primary and secondary neurological disorders. Maternal and fetal outcome were also recorded into different disorders. And also imaging were recorded in all patients.

Table -01 Parity Of Cases

Parity	No. of cases (n-102)
Primigravida	76 (74.5%)
Multigravida	26(25.5%)

Table -02

Comorbidity	No. Of Cases (n-47)
Preexisting epilepsy	25(24.5%)
Hypertension	15(14.7%)
Diabetes	5(4.9 %)
Renal diseases	02

Table -03

Clinical Features	No of Cases	(%)
Headache	35	34.31
Seizures	35	34.31
Loss of consciousness / altered sensorium	25	24.5
Weakness of limbs (Monoparesis/hemiparesis)	15	14.7
Dysphasia / Aphasia	05	4.9

Tab -04

Cause of neurological disorder	No. of cases (n-102)	%	Infant mortality rate (Percent)	Maternal mortality (Percent)

Epilepsy	35	34.31	00	00
Eclampsia	23	22.55	17.39	8.69
Intracerebral bleed	10	9.80	20	20
Cortical venous thrombosis	9	8.82	23.07	23.07
CNS infections	7	6.86	00	00
Space occupying lesions	03	2.94	00	00
Carpel tunnel syndrome	03	2.94	00	00
GB syndrome	03	2.94	00	00
Hepatic encephalopathy	04	3.92	100	50
Septic encephalopathy	03	2.94	100	100
Uremia	01	0.98	100	00
Dyselectrolemia	01	0.98	00g	00

DISCUSSION-

Epilepsy is most common neurological disorder in our study epilepsy were noticed in 35 patients (34.31 %), which is similar to other studies ⁴. Out of 35 cases, only 10 patients had new onset seizures. In rest of cases, patients had history of seizures and were on antiepileptic drugs. It may be because of altered metabolism of drug by liver and kidney. In kidney, increased renal blood flow and increased glomerular filtration and increased renal clearance decreases plasma concentration of drugs. Similarly altered liver metabolism because of increased glucuronidation reduces the availability of the drugs. That is why, obstretian must be aware of preexisting epilepsy and drugs, taken by patients. Monitoring of plasma concentration of drugs should be done to prevent seizures in this period. In all patients with new onset seizures, serum electrolytes, LFT, KFT and proper radiological imaging should be done.

Hypertension associated with pregnancy had increased risks of eclamptic seizures which is unique to pregnancy. In our study, eclampsias were seen in 23 (22.55 %) cases which accounts to 8.69 % maternal mortality rate and 17.39 % neonatal mortality rate in our study. This should be managed promptly to reduce maternal and neonatal mortality rate by giving magnesium.

Pregnancy is a hypercoagulable stage because of increased amount of prothrombotic level and increased fibrinogen level so these patients have increased risks of cortical venous thrombosis. Which is life threatening if not managed in early stage. Hypercoagulable state remains in postpartum period for 03-04 weeks also ^{4,5,6}. In our study 09 patients (8.85 %) developed cortical venous thrombosis with high (23.07 %) maternal mortality rate and also high neonatal rate (23.07 %) ^{5,6}. These are more common in postpartum period rather than in antenatal period. This is similar to other studies.

CNS infections like tuberculosis, pyogenic, neurocysticercosis toxoplasmosis etc are also seen in pregnancy and postpartum period which must be included in differential diagnosis. They have increased predilection in this period as in pregnancy and postpartum period; there are immunological changes, which cause multiorgan involvement of these diseases. In our study 07 cases (6.86 %) were affected with different CNS infections. which were similar to other studies ^{5,6,7}.

In some cases, of pregnancy and postpartum period, space occupying lesions were present which were noticed in radiological imaging after various symptoms like headache, newly onset seizures, acute onset hemiplegia etc. They were followed till postpartum period and were operated as elective cases. In our study 03 patients (2.94 %) have space occupying lesions. In these cases, no mortality seen neither in mothers not in fetus ^{5,6}.

Carpel tunnel syndrome is because of weight gain followed by fluid retention and compression of median nerve, in pregnancy. In Our study 03 patients (2.94 %) had carpel tunnel syndrome which had good maternal and neonatal outcome

which similar to other studies.

Because of several hormonal changes and increased cardiac output, and blood volume, pregnancy and postpartum stage is more prone to develop intracerebral bleed. If patients develop intracerebral bleed, they have negative prognosis and should be managed conservatively or by surgery depending on size and or mass effect caused by hematoma. In our study 10 cases (9.8%) have intracerebral bleed, in which 05 patient's needs surgery and rest were managed by conservative management on antiepileptic drugs and dehydrants in intensive care. In these cases, 02 cases (20%) could not survive because of various reasons. Ischemic cerebrovascular accidents are less common and in our study ^{7,8,9,10}. We don't have any case of ischemic cerebrovascular accidents.

AV malformations may be detected first time in pregnancy or postpartum period. This is because of hormonal changes during pregnancy, may aggravate their sizes and it may be symptomatic in both ways either ruptured or unruptured. If not ruptured, they may cause mass effects over nerve, causing nerve palsy. If ruptured, they have catastrophe by creating intracerebral bleed and need urgent diagnosis by radio imaging and angiography and further management either by endovascular management or by surgery to prevent further rupture and decreases mortality. In our study, we do not have any case of AV malformations.

Guillain Barre Syndrome is rare autoimmune neurological disease more often seen in postpartum period due to increase in proinflammatory cytokines which is characterized by acute inflammatory polyneuropathy with ascending progressive weakness of limbs. In our study GB syndrome was seen in 03 patients (2.94 %) but they were recovered well with immunoglobulin's infusion with no maternal or neonatal mortality. Bell's palsy, or idiopathic palsy of the seventh cranial nerve, is seven times more prevalent than expected during the third trimester of pregnancy ⁶. In our study we did not find any such nerve involvement.

Imaging plays a very important role in diagnosing neurological disorders. They not only able to detect primary neurological disorders but also exclude them with secondary neurological disorders like different metabolic or dyselectrolemia which further causes encephalopathy. In our study ,09 patients (8.82%) had such secondary neurological disorders with grave prognosis to mother as well as to fetus. 04 patients had hepatic encephalopathy with 75% (03 cases) maternal mortality and 100 % neonatal mortality rate, while 03 cases (2.94 %) have septic encephalopathy with 100% (03 cases) maternal and neonatal mortality, 01 cases have uremia with nephrotic syndrome with 100 maternal mortalities with 100 percent still births.). 01 cases have severe electrolyte imbalance which was managed with survival.

CONCLUSION-

Neurological disorders in pregnancy and postpartum period needs urgent intervention. A high-level suspicion is required in managing such cases as these disorders affect maternal a neonatal mortality rate. Such cases must be individualized. Each patient must be managed by thorough history taking, careful examination and proper pathological and radiological investigations to rule out underlying pathology. Multidisciplinary approach is required in managing these cases including neurologist, neurosurgeon, obstetrician, medicine, intensivist, nephrologist or gastrologist depending upon the primary underlying disease. Seizure in pregnancy or postpartum period may increase risk of morbidity and mortality whether they were preexisting or new onset seizure.

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Conflict Of Interest-

The authors declare no conflict of interest in this study.

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