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Original Research Article

Study of Neurological Complications in Peripartum Period and its Pregnancy

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Abstract:

Background and Objectives: There are rapid physiological changes during pregnancy and puerperium which canprecipitate new neurologic or Psychiatric symptoms. The range of neurological conditions affecting women of reproductive age is extremely broad. To study the Incidence and Clinical profile of patients with neurological complicationsin Peripartum period.

Methods: It was a prospective observational study for a period of Two years. Clinical profiles of the patients, maternal and perinatal outcome were studied. patients admitted in department of Medicine and Obstetrics and Gynecology in IGIMS Patna. with neurological symptoms in antenatal and postpartum period upto 6 weeks were included in the study.

Conclusion: Neurological complications have now become important causes of maternal mortality andmorbidity. Early detection and intervention is required to reduce the burden of neurological complications requiring intensive care.

Keywords: Morbidity, Perinatal Mortality, Peripartum, Pregnancy.

Introduction

During pregnancy and the puerperium, women experience rapid physiological changes that can precipitate new neurologic or psychiatric symptoms. Identification and treatment of neurological disorders in women during the peripartum period present special challenges to the neurologist and other health providers. The range of neurologicalconditions affecting women of reproductive age is extremely broad. One of the precipitating factors for neurological complications in pregnancy is eclampsia. Incidence of eclampsia in India varies from 0.179 to 5%, the average being 1.5%. [1] There are adaptations of almost every maternal organ system to meet demands of fetal development & birth. Modifications in neuroanatomy, reproductive endocrinology systemic and cerebral circulation, coagulation profile and metabolism can predispose to onset or cause deterioration of various neurological disorder. The lack of knowledge is due to the fact that research on pregnant women poses technically difficulty, is challenging, and highly regulated due to ethical concerns. [2]

Material and Methods

It was a prospective observational study for a period of Two years. Clinical profiles of the patients, maternal and perinatal outcome were studied. patients admitted in department of Medicine and Obstetrics and Gynecology with neurological symptoms in antenatal and postpartum period in Indira Gandhi Institute of medical Sciences, Patna. detailed history, sociodemographic data, examination and investigation was carried out. CT scan was done for patients after delivery. MRI with MRV was done in selected cases [3,4]

Sample size is estimated by taking population proportion of eclampsiaa 1.5% according to study "Eclampsia in India through Decades" by P. N. Nobis et al conducted in 2016, taking 95% confidence interval and absolute precision of 2.4%, sample size works out to be 99.

Inclusion Criteria

Any pregnant woman presenting with any neurological symptoms in any period of gestation, Delivered patients in postpartum period (within 6 weeks of delivery) presenting with any neurological symptoms.

Exclusion Criteria

Patients with known case of epilepsy on treatment, Neurological complications developing after 6 weeks following delivery.

Quantitative variables were presented as mean (SD) or median (range). Qualitative variables were presented as percentages. Association of categorical variables with perinatal deaths and maternal outcomes was assessed using chi square test. Two tailed p values were obtained to interpret statistical tests of significance.

Results

Out of 10398 deliveries that took place in our hospital during the study period, 106 cases presented with neurological complications to the department of Obstetrics andGynecology. In this study the incidence of neurological complications in the peripartum period was 1.01%. Following is the distribution according to diagnosis of each neurological complication.

Incidence of neurological complications in peripartum period

Diagnosis	Number	Incidence of events per 10,000 deliveries with 95% CI
Total deliveries	10398	
Total	106	9.8 (8.4-12.3)
Eclampsia with PRES	48	46.2 (34.1-61.2)
Eclampsia	34	32.7 (22.7-45.7)
CVT	15	14.4 (8.1-23.8)
Intracranial haemorrhage	6	5.8 (2.1- 12.6)
Others	3	2.9 (0.6-8.4)

Out of 10398 deliveries that took place, 106 patients presented with neurological complications in the peripartum period. Among 106 patients, the incidence of eclampsia with posterior reversible encephalopathy syndrome was 46.2, that of eclampsia without PRES was 32.1, that of CVT was 14.4, intracranial hemorrhage was 5.8, and that of miscellaneous was 2.9 which included metabolic encephalopathy, lacunar infarct and those that went against medical advice. Distribution of participants by their age category.

Age categories (years)	Number	Percentage
< 20	30	28.3
21-25	60	56.6
26-30	11	10.4
31-35	5	4.7
Total	**106**	**100**

28.3% of patients were in the age group of less than 20 years. 56.6% patients were in agegroup of 21-25 years, 10.4% were in age group of 26-30 years, 4.7% were in age groupof 31-35 years. There were no cases above 35 years in our study. Distribution according to place of Antenatal check-up.

ANC	Number	Percentage
PHC	59	55.7
District hospital	23	21.7
Tertiary care hospital	14	13.2
Private setup	10	9.4
Total	**106**	**100**

Out of 106 cases 55.7% of the cases had Antenatal care at Primary health centres, 21.7% had at district hospitals, 13.2% had at tertiary care hospitals and 9.4% had in private clinics. Out of 106 patients 82.9% cases were primipara, 9.5% were para 2, 4.8% were para 3, 2.9% were para 4 and above. Gestational age distribution in the antenatal cases (n=62)

Gestational age	Number	Percentage
<34 weeks	23	37
34-36.6 weeks	11	17.7
37 weeks and above	28	45.16
Total	**62**	**100**

Period of pregnancy

Period of pregnancy	Number	Percentage
Antepartum	44	41.5
Intrapartum	2	1.9
Postpartum	44	41.5
Antepartum+ Postpartum	13	12.3
Intrapartum +Postpartum	3	2.8
Total	**106**	**100**

Out of 106 cases, 41.5 percent of patients had neurological complications in the antepartum period, 1.9% in the intrapartum period, 41.5% in the postpartum period, 12.3% in both antepartum and postpartum period, 2.8% in both intrapartum and postpartum period.

Perinatal Outcome

Perinatal outcome	Number	Percentage
Live Births	74	70.4
Still Births	23	21.9
Early neonatal deaths	8	7.6
Total	105	100

Out of 105 cases there was live birth in 78.1% cases (live birth + early neonatal deaths) 21.9% had still birth and 7.6% had early Neonatal deaths. There was a perinatal mortality in 29.5% cases (still births +early neonatal deaths). There were 29 admissions to Neonatal intensive care unit. Out of 29 cases requiring admission to NICU there were 8 early neonatal deaths. Out of 105 cases which delivered perinatal deaths were seen in 29.5% of cases (n=31). Most babies were admitted to NICU in view of low birth weightsand prematurity.

Association between Mode of delivery and perinatal death

Mode of delivery	Perinatal deaths			
	Yes		No	
	N	%	N	%
Vaginal-Spontaneous	4	14.3	24	85.7
Vaginal-Induced	19	57.6	14	42.4
LSCS	8	18.2	36	81.8
Total	31		74	
Chi square value=18.3, P value <0.001				

There was 14.3% perinatal mortality among 28 cases who had spontaneous vaginaldelivery, 57.6% perinatal mortality in 33 cases who had induced vaginal delivery and 18.2% perinatal mortality in 44 cases who underwent caesarean section.

Discussion

Incidence of neurological complications in various studies.

Study	Incidence
P. Ranjith et al.[5]	2 %
B Shantarani et al. [4]	0.01%
S Gupta et al. [9]	0.58%
Firdushi Begum et al.[14]	0.85%
Sarella LK et al. [15]	0.56%
Present study	1.01%

The incidence of neurological complications in the present study is 9.8 (8.4-12.3) per 10,000 deliveries (1.01%). The incidence of neurological complications was 2 % in study by P. Ranjith et al. [5], 0.01% in study by B shantarani et al [4] 0.58% in study by S Gupta et al (27), 0.85 % in study by Firdushi Begum et al [14], 0.56% in study by sarella et al. [15] and 1.01% in the present study. The variation in the incidence in different studies is because of different inclusion and exclusion criteria used in different studies Locality.

Study	Urban	Rural
Bharati et al	15.3%	84.7%
Trivedi et al	44 %	56%
Present study	17%	83%

84.7% of cases were residing in rural areas in study done by Bharati et al [16], 56% in study done by trivedi et al [12] which is comparable to the present study i.e 83% residing inrural areas. High incidence of neurological complications in rural areas show that there is lack of antenatal care, ignorance, lack of knowledge about seeking timely health care and limitedskilled human resources in rural areas. There was mortality in 20% cases in study by Aisha Abdullah et al, 3.2% in study by P Ranjith et al.[5], 9.2% in study by R Bharathi et al [16] and 14.1% in the present study. The mortality in study by P Ranjith et al [5] was less because of exclusion of cases of eclampsiafrom the study. And study by Bharati et al [16] included only cases with postpartumeclampsia. The results of the present study were comparable with study by Aisha Abdullah et al. [10] Maternal mortality increased with the increase in age and this association is statistically significant with a P value of 0.008. It was highest in the age group 31-35 years and lowest in the age group of <20 years (3.3%). 13.8 % of mortality was seen in primipara women and 16.7% was seen in multipara women and the difference was not statistically significant. There was significant association seen between maternal outcome and number of seizuresseen in the patient with a p value of <0.001. There was 100% mortality in cases withmore than 10 seizures whereas only 4.2% in cases having only one seizure. This guidesus to the importance of early intervention.

Perinatal outcome in various studies

Study	Perinatal deaths
Kuljit kaur et al [17]	56 %
Rajasri et al [18]	35 %
Aisha Abdullah [10]	24.4 %
Present study	29.5 %

There were 56% perinatal deaths in study by Kuljit Kaur et al, 35% in study by Rajasriet al,

24.4% in study by Aisha Abdullah et al and 29.5% in the present study. The perinatal deaths were slightly less when compared to the perinatal deaths seen in thestudy conducted by Rajshri G et al. (2011) [18] and kuljit kaur et al [17]. This is probably due to improvement in the intrapartum monitoring and early intervention with caesarean section. Perinatal mortality was significantly increased with induced vaginal deliveries (57.6%) compared to spontaneous vaginal deliveries (14.3%) and Caesarean sections (18.2%) with a P value of < 0.001 which is statistically significant. Hence vigilant monitoring in the induced cases with preferably Cardiotocography is required and early intervention with Caesarean section can reduce the perinatal mortality significantly.

Conclusion

Neurological complications have now become important causes of maternal mortality andmorbidity. There are very few studies which have studied the overall neurological complications in the peripartum period. The presentation of neurological complications also varies from seizure, to abnormal behavior to headache and visual symptoms. With the advances in better imaging it is nowpossible to understand the underlying pathophysiology better.

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