

## Neurological Manifestations in Pregnancy and Puerperium- A Retrospective Study in a Tertiary Care Hospital

Chandra vadhana. K<sup>1</sup>, Banupriya. M<sup>2</sup>

<sup>1,2</sup>Assistant Professor, Department of Obstetrics and Gynaecology, Coimbatore Medical College Hospital, Coimbatore, Tamilnadu, India.

Corresponding Author: Chandra vadhana. K

### Abstract

**Aims and Objectives:** To study the clinical profile of women with neurological manifestations in pregnancy and puerperium.

**Methodology:** This is a retrospective study carried out on 141 patients at the Department of Obstetrics and Gynaecology, Coimbatore Medical College Hospital from January 2017- December 2017. All pregnant, post abortal and postnatal women requiring neurological consultation were included in the study. Demographic data, clinical course and outcome were analysed.

**Results:** The total number of deliveries during the study period was 8153. The incidence of neurological manifestations was 1.73% in this study. The most common clinical presentation in this study was seizures (82.98%) followed by headache (70.21%). Mortality rate was 15.7%.

**Conclusion:** Eclampsia is the most common neurological disorder in pregnancy and puerperium followed by cerebrovascular disorders and epilepsy. High index of suspicion, prompt diagnosis and management can improve the maternal and fetal outcome.

**Keywords** – eclampsia , pregnancy, puerperium, mortality, neurological manifestations.

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### I. Background

Acute neurological disorders that require hospitalization are relatively rare in women during the childbearing age. Physiological and hormonal changes during pregnancy can precipitate new neurological symptoms. Neurological disorders may be unique to pregnancy like eclampsia or may be indirectly related to pregnancy like cortical venous thrombosis, ischaemic stroke and intra cranial haemorrhage. Pregnancy may alter the course of a pre existing neurological disorder like epilepsy. The average age of pregnancy has increased in the recent years resulting in increased neurological complications during pregnancy and puerperium causing considerable morbidity and mortality [1,2]. As neurological disorders are responsible for 20% of maternal deaths [3], prompt diagnosis and management are necessary. During pregnancy, women are vulnerable because many medications and diagnostic tests are avoided considering possible harm to the fetus. This study discusses the clinical profile of neurological disorders in pregnancy and puerperium in the local population and the outcome.

### II. Methodology

This is a retrospective study done at the Department of Obstetrics and Gynaecology, Coimbatore Medical College Hospital for a period of one year from January 2017 to December 2017. All pregnant, postabortal and postnatal women (upto 42 days of termination of pregnancy) presenting predominately with neurological signs and symptoms requiring neurological consultation were included in the study. Data regarding demographic details, clinical profile including parity, gestational age, antepartum complications, history of neurological and obstetric illness, presenting symptoms, imaging studies (CT/MRI brain) were analysed. A total of 141 patients were included in the study.

### III. Results

A total of 141 women presented with neurological manifestations during the study period. The number of deliveries during this period was 8153, giving an incidence of 1.73%.

Table1: Demographic data

Age in years	Number	Percent
Upto 20yrs	31	21.99

21-25 yrs	68	48.23
26-30 yrs	34	24.11
31-35 yrs	7	4.96
>35 yrs	1	0.71

**Table 2: Parity**

Parity	Number	Percent
Primi	92	65.25
Multi	48	34.04
Grandmulti	1	0.71

**Table 3: Clinical presentation**

Clinical presentation	Number	Percent
Seizures	117	82.98
Headache	99	70.21
Blurring Of Vision	2	14.29
Altered Sensorium	5	3.55
Hemiparesis/Quadripareisis	3	2.13

As the same patient presented with more than one symptom, the number does not correlate.

**Table 4: Timing in relation to pregnancy**

Timing	Number	Percent
Antenatal	74	52.5
Intrapartum	2	1.41
Postpartum <24 hours	8	5.67
Postpartum day1-7	35	24.82
Postpartum>7days	22	15.6

**Table5: Distribution of neurological disorders in the study group**

Neurological Disorder	Number	Percent
Eclampsia	89	63.12
Epilepsy	10	7.09
Cerebrovascular Disorders	37	26.24
CNS Infections	1	0.71
Post Spinal Headache	1	0.71
Tuberculoma Brain	1	0.71
Septic Encephalopathy	1	0.71
Hepatic Encephalopathy	1	0.71

**Table 6: Radiological imaging (CT/MRI brain)**

Radiological finding	Number	Percent
Normal study	16	24.62
PRES	11	16.92
CVT	30	46.15
Infarct/haemorrhage	7	10.77
Tuberculoma brain	1	1.54
Total	65	100

CT- Computed tomography

MRI-Magnetic resonance imaging

PRES-Posterior reversible encephalopathy syndrome

CVT- Cortical venous thrombosis

**Table 7: Outcome**

Outcome	Number	Percent
Discharged In Good Condition	130	92.2
Residual Sequelae	3	2.13
Death	8	5.67

#### IV. Discussion

The incidence of neurological manifestations was 1.73% in this study. This is consistent with the study by Sandya Renukesh *et al.*, where 1.97% (54 women) of pregnancies had neurological manifestations[4].

In this study, majority of the women presenting with neurological manifestations were aged between 21-25 years (48.23%). This is consistent with the study by Al-Hayali RM *et al.*, [5] where the mean age of the patients with acute peripartum neurological emergencies was  $24.38 \pm 5.693$ .

In this study, primigravida had a higher incidence of neurological manifestations (65.25%) compared to multigravida (34.04%). This is comparable to a study by Al-Hayali RM *et al.*, where the incidence in primigravida was higher than in multigravida (85% vs 15%) [5]. This is probably due to the fact that pre eclampsia is more common in primigravida.

In the present study, the most common symptom was headache (70.21%) and the most common sign was seizures (82.98%). According to Ranjith P *et al.*, headache and seizures presented in 64.5% and 70.9% respectively [6]. According to a study by Gupta *et al.*, headache and seizures occurred in 90% and 92% respectively [7].

Most of the patients in our study presented in the antenatal period (52.5%), 24.82% between 1-7 days following delivery, 15.6% presented more than 7 days postpartum, 5.67% within 24 hours of delivery and 1.41% presented in the intrapartum period.

In our study, the most common neurological disorder was eclampsia (63.12%) followed by cerebrovascular disorders (26.24%). This is comparable to Al-Hayali RM *et al.*, study [5] where eclampsia and CVT were diagnosed in 66.7% and 23.3% respectively. According to To *et al.*, the incidence of epilepsy was 63.3%, eclampsia 11.8% and cerebrovascular disorders 4.9% [8].

The incidence of cortical venous thrombosis is high in India. In the present study, the incidence of CVT is 21.28% (n=30). Risk factors include anaemia, dehydration, infection, advancing maternal age, associated hypertension, caesarean delivery. CVT has a mortality rate of 2-10%, although pregnancy related CVT has significantly less mortality. Secondary intra cranial haemorrhage is the most common cause of maternal death due to CVT. In our study, headache followed by seizures was the most common presentation of CVT. The mortality rate of CVT in the present study is 9.8%.

In this study, radiological imaging was done in 65 out of 141 patients. The most common finding was CVT in 46.15%, followed by normal study in 24.62%, PRES in 16.92% and infarct/haemorrhage in 10.77%.

Eight out of the 51 maternal deaths during the study period were due to neurological complications. Therefore the mortality rate due to neurological manifestations was 15.7%. This is comparable to the study by Hosley CM *et al.*, where 20% of maternal deaths are due to neurological disorders [9]. Out of the 8 maternal deaths, 5 were due to CVT, 1 due to intracranial haemorrhage, 1 due to CNS infection and 1 due to hepatic encephalopathy.

## V. Conclusion

To conclude, eclampsia is the most common neurological disorder in pregnancy and puerperium followed by cerebrovascular disorders and epilepsy. As headache is the most common presenting symptom, it is important to differentiate benign headache from that occurring due to neurological disorders. Patients with pre eclampsia and eclampsia should be diligently observed for neurological deficits. A complete neurological examination and imaging studies will diagnose CVT at the earliest. Hence high index of suspicion, prompt diagnosis and management can improve the maternal and fetal outcome.

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