



## RESEARCH ARTICLE

### A STUDY OF SEIZURES IN WOMEN DURING POSTPARTUM PERIOD

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#### ABSTRACT

All patients who were admitted in our hospital with history of seizures in the postpartum period (within 6 weeks after delivery) were included in the study to ascertain the cause of seizures and their outcome, and women with prior history of epilepsy were excluded from this study. Among 95 patients recruited, primipara women (67 patients) had high risk of seizures. Women between the age group of 21-25 years constituted a large number of patients in this study (44.26%). Seizure occurrence was more on the first day following delivery (69.47%). Imaging of the patients showed posterior reversible encephalopathy syndrome (PRES) as the most common cause of seizure (35.57%), second most common cause was cerebral venous thrombosis (CVT) (31.57%). Eclampsia was the third among the list (29.47%). 3 patients had intracerebral haemorrhage (3.15%). Eclampsia patients had normal imaging with high blood pressure, high (++++) urine albumin and deranged haematological values. Women with PRES and eclampsia had good outcome with no mortality. While patients of CVT had a mortality of 10% in our study.

**Conclusion:** In this hospital based study, PRES was the most common cause of seizure in postpartum women (35.57%), followed by CVT (31.57%) and eclampsia (29.47%). Patients of PRES had good outcome and patients of CVT had higher mortality.

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## INTRODUCTION

During pregnancy the body prepares itself for the proper growth of the baby, its nourishment, and homeostasis after the delivery. Physiological changes in women start immediately after the delivery. Pregnancy is itself a hypercoagulable state in which there is increase in coagulation factors, particularly factor VIII, factor IX and factor X (Priya Soma-Pillay, 2016). There is hemodilution associated with decrease in platelet count, not more than 1 lakh/ cc, up to 50% rise in fibrinogen levels. These changes predispose the patient to increased risk of venous thrombosis during third trimester and postpartum period, and hypercoagulability worsens after delivery as a result of volume depletion and trauma. There are other changes in cardiovascular system, water metabolism, renal vasculature and endocrinal changes. There are a number of causes of seizures in the post-partum period such as eclampsia, cerebral venous thrombosis, meningitis, encephalitis, tuberculoma, neurocysticercosis etc (Inamdar, 2013). The studies carried out so far have shown wide variation in the occurrence of epilepsy (To and Cheung, 1997; Janaki and Thomas, 1963; Agarwal, 1968; Srinivasan and Ramamurthi, 1971; Bardy, 1987) in the ante partum period but systematic study for the causes of

epilepsy exclusively in postpartum period in our country are lacking. By convention, seizures in postpartum period are treated as Eclampsia. The various series from our country report the Incidence of eclampsia between 1 to 5% (Gupte and Wagh, 2014; Anuja et al., 2013) both in the antepartum and postpartum period. A study from India has shown that epilepsy and hepatic encephalopathy emerge as the predominant neurological disorders during pregnancy and puerperium (Gupta et al., 2006). PRES was more among cases of postpartum eclampsias as compared to antepartum eclampsias (Shobha Bembalgi et al., 2015). CVT is also a common cause of seizures in postpartum period. CVT has extremely varied clinical presentations and accurate and prompt diagnosis can significantly reduce risk of acute complications and long-term sequelae (Dash et al., 2015). A study at NIMHANS has shown that CVT patients treated with heparin have good prognosis (Nagaraj et al., 1999). In this study we have exclusively focused on the incidence of seizures in the postpartum women, and their outcome.

## MATERIALS AND METHODS

This study was conducted at Jagadguru Sri Shivarathreeswara Hospital, Mysuru, a tertiary care centre, during a period of two years from January 2015 to December 2016. This study was an observational study where in patients who were admitted to

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obstetrics ward and neurology ward with history of seizures in the postpartum period were analyzed. Women with history of seizures in postpartum period were included in the study. Women with prior history of seizures, known case of epilepsy and patient with pseudo seizures were excluded from the study. Analysis of the clinical presentation, cause for and management of seizure was done. Demographic details such as education, employment, socioeconomic status, religion, residence, family type were taken. According to the clinical scenario the patient were subjected to either a Computed Tomography or Magnetic Resonance Imaging. Data of routine investigation such as complete hemogram, random blood sugars, urea, creatinine, bleeding time, clotting time, prothrombintime activated partial thromboplastin time and urine routine was collected.

## RESULTS

A total 95 patients were recruited into the study and were analyzed. They were either admitted with history of seizures in the postpartum period having delivered in other centers or had seizures after delivery in our institute. Demographic details showed that most of the women were from rural background (70/95 cases) and belonged to Lower socioeconomic status (50/95 patients). Women with lower level of education and nuclear family formed bulk of the patients. The seizures occurred more commonly among younger women. Out of 95 patients, 43 patients (45%) women were in the age group of 21-25 years, 16(17%) were below the age of 20 years, 26(27%) women were between 26-30 years and 10(11%) were above the age of 30 years.

**Table 1. Age distribution**

Age in years	Number of patients	Percentage
<20	16	17%
21- 25	43	45%
26- 30	26	27%
>30	10	11%
Total	95	100%

The risk of seizures was more in the Primipara. Out of 95 women 67(70%) were primipara, 18(19%) are para 2 and 11(11%) women are para 3.

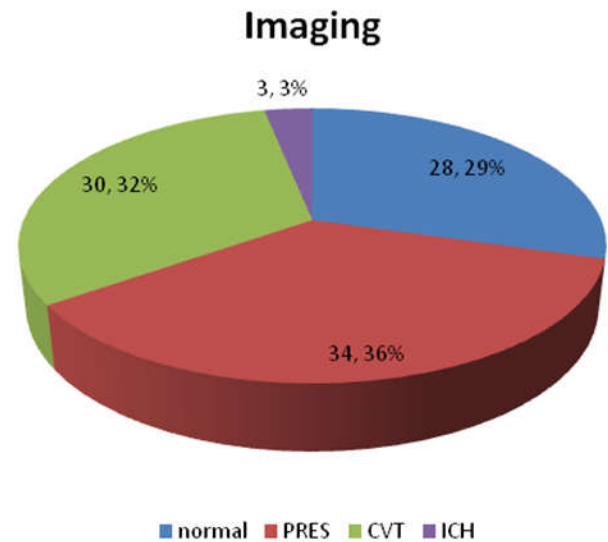
**Table 2. Parity**

Parity	Number of patients	Percentage
Para 1	67	70%
Para 2	18	19%
Para 3	11	11%
Total	95	100%

**Table 3. Seizures after delivery**

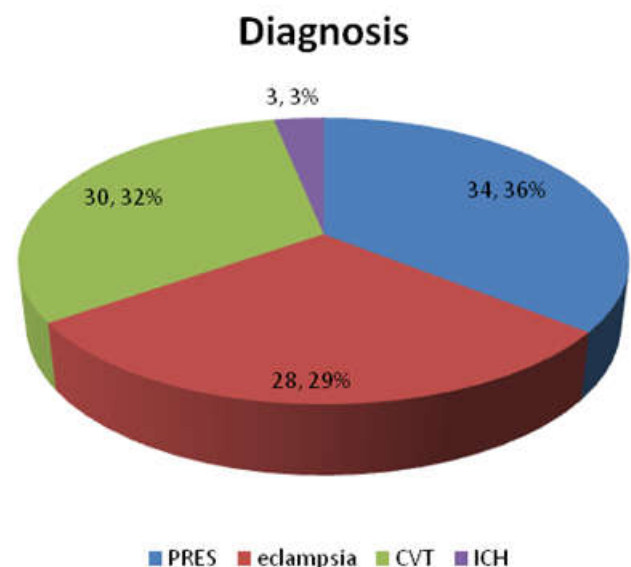
Post-delivery day of seizures	Number of patients	Percentage
Day 1	66	70%
Day 2	3	3%
Day 3	4	4%
Day 5	6	7%
Day 6	3	3%
Day 7	3	3%
Day 10	3	3%
Day 15	6	6%
Day 21	1	1%
Total	95	100%

The burden of seizures was more on the first postpartum day. Nearly 70% (66 out of 95 women) had seizure on first day of delivery. Only 1 patient had seizure of 21<sup>st</sup> day of delivery in this study. All the patients were subjected to imaging. Out of 95 patients 34(36%) had Posterior Reversible Encephalopathy Syndrome (PRES) features in imaging, which emerged as the most common finding, followed by Cortical Venous Thrombosis (CVT) as the second most common finding 32%(30). 28(29%) patients had normal imaging findings while 3(3%) of our patients had intracranial haemorrhage (ICH).



**Figure 1. Imaging features**

Thus the most common cause of seizures in the postpartum women was PRES constituting 36%, next was CVT, 32%, third was eclampsia 29% and 3% had ICH. However we have not repeated imaging among the patients who had normal imaging initially.



**Figure 2. Diagnosis**

Majority of the patients in our study had normal outcome, that is patients were discharged without any complications 86(91%). 9 (9%) patients out of 95 expired. Out of 9 expired patients six patients had CVT, two had ICH and the remaining patient died due to secondary complications.

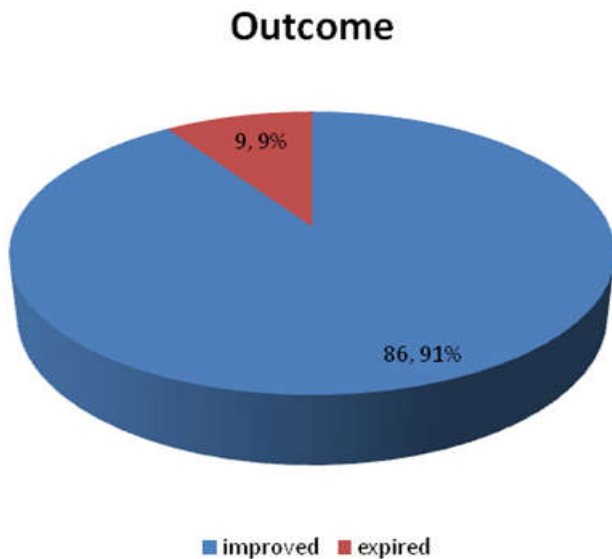


Figure 3. Clinical outcome

Thus CVT was the leading cause of mortality in these patients. PRES had the best outcome without any mortality.

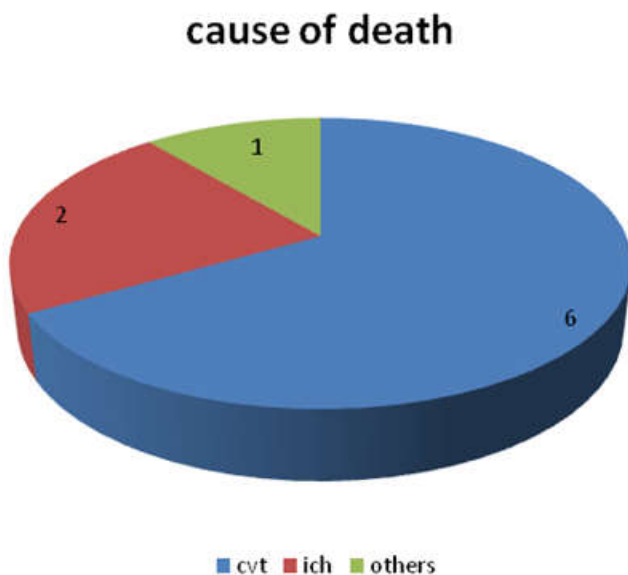


Figure 4. Cause of death

## DISCUSSION

Postpartum period starts immediately after the delivery and continues till 6 weeks after the delivery. The physiological changes which occur during pregnancy as well as immediately after the delivery predispose the woman to various neurological complications. A study by Gupta et al. has categorised the neurological disorders as the primary neurological disorders and secondary neurological disorders. The various causes of seizures in the postpartum period include eclampsia, cerebral venous thrombosis, CNS infections, tuberculoma, neurocysticercosis, intracranial haemorrhage, PRES, metabolic causes, etc (Gupta et al., 2006). In our study PRES was the most common cause of seizures. The common presentations of patients with PRES include headache, seizures, blurring of vision to blindness (Shobha Bembalgi et al., 2015). Cerebral venous thrombosis is one of the dreaded neurological complication in the postpartum period. CVT in Indian women is more common due to high fat diet and

restricted water intake during puerperium (Donaldson and Lee, 1994). Rajoor UG et al. in their study suggested possible role of fluid restriction practice in the causation of CVT (Rajoor, 2017). In our study most patient's literacy rate was low. CVT was the second most common cause of seizures and was associated with high mortality. This may be due to unscientific health practices like water restriction in the postpartum period. Gupta S et al has studied the presenting features of patients with seizures and has shown that seizures were more common in antepartum period, majority patients presented with multiple seizures (Gupta et al., 2006). In our study only postpartum seizure patients were taken in the study. Most of the patients were primigravida, seizures commonly occurred on the first day of delivery. All our patients had generalised tonic clonic seizures. Shobha Bembalgi et al studied PRES in eclampsia where PRES was more common in postpartum eclampsia than in antepartum eclampsia. In our study we classified PRES and eclampsia as separate entity according to the diagnostic criteria for eclampsia. In our study the patients of PRES had normal urine albumin. Her study also say that PRES was more common in primigravida and in our study the result was same that is it was common among primipara. The incidence of CVT among 32% of the cases in our study was in line with the reported incidence of 35-65% of the case in most studies (ShobhaBembalgi et al., 2015). In most studies intracranial haemorrhage constituted between 2 to 7% of the cases. We report an incidence of 3% which is in line with the earlier observations.

## Conclusion

In this hospital based study of seizures in the postpartum period primipara were the most affected (70%). Seizures were more common in the younger population with age below 25years (62%) and most commonly occurred on the first day of delivery (70%). PRES was the most common cause of seizures (36%) followed by CVT (30%) and eclampsia (29%). Out of 95 patients 91% had good outcome and 9% patients expired. CVT was the leading cause of mortality in our study.

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