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A RETROSPECTIVE ANALYSIS OF CONVULSIONS IN PREGNANCY IN A TERTIARY REFERRAL MEDICAL COLLEGE HOSPITAL

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HOW TO CITE THIS ARTICLE:

Anoop Sreevalsan, Srinija P, Surya P, Vasantha N. Subbiah. "A Retrospective Analysis of Convulsions in Pregnancy in a Tertiary Referral Medical College Hospital". Journal of Evolution of Medical and Dental Sciences 2014; Vol. 3, Issue 22, June 02; Page: 6058-6070, DOI: 10.14260/jemds/2014/2705

ABSTRACT: AIM: To analyze the various convulsions in pregnancy with particular reference to non-eclamptic convulsions and its incidence. **MATERIAL & METHODS:** A retrospective analysis of all antenatal, intranatal and postnatal patients who presented with convulsions was selected and details collected. We analyzed the period from 2007-2013. During this period we had 4315 deliveries. Out of this we had 18 patients who had convulsions. These were then analyzed. **RESULTS AND CONCLUSIONS:** Out of the 18 convulsions we had 12 cases of eclampsia which gave us an incidence of 0.27%. 6 were of non-eclamptic convulsions giving us an incidence of 0.139% including 2 cases of posterior reversible encephalopathy syndrome, 2 cases of cortical venous thrombosis, 1 case of neurocysticercosis and 1 of subarachnoid hemorrhage. The presence of 1/3rd of cases being non-eclamptic should put us on our guard against labeling all convulsions in pregnancy as eclampsia and a detailed workup including radiological is imperative to diagnose correctly. Our small sample size does risk bias and further studies are needed to get a correct incidence.

KEYWORDS: Eclampsia, convulsions in pregnancy, PRES, CVT, neurocysticercosis, subarachnoid hemorrhage.

INTRODUCTION: Convulsions in a pregnant patient are an obstetrician's nightmare.^{13,14} Prior to treatment options being available, the maternal mortality was in excess of 30% and fetal mortalities greater than 60-80% were historically reported. Convulsions in a pregnant patient could be due to pregnancy induced hypertension causing eclampsia or could be non-eclamptic due to various causes like epilepsy, SOL like Neurocysticercosis, tuberculoma, metabolic like hypoglycemia/electrolyte imbalance, arterial events like hemorrhage or venous events like cortical venous thrombosis. We wanted to investigate how many of these convulsions were non-eclamptic and hence this retrospective study was done.

METHODS: After getting departmental approval, records from 2007 to 2013 were studied. All pregnant patients who had a convulsion were then included in the study. With the help of the medical records department, these case sheets were then analyzed to get details. These were then subjected to the study.

RESULTS: We had 4315 deliveries in this period. Of these we had 18 patients with convulsions in pregnancy. Out of these 12 were due to eclampsia. The other 6 were non-eclamptic convulsions.

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BOOKING:

Age:

Gravida:

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History of PIH/eclampsia/ epilepsy in present or past pregnancy:

One patient with previous history of epilepsy had her last convulsion at the age of 8 years. She is now aged 28years.

Admission Blood Pressure:

Consciousness on admission:

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Antenatal vs. Postnatal convulsions:

Gestational age at convulsions:

Number of convulsions:

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Place of occurrence of convulsions:

Some patients [n=4] had convulsions both at home and in the hospital.

Mode of termination:

One patient went against medical advice before delivery and we are unable to ascertain mode of delivery.

Sex of baby:

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One patient had an abortion, therefore sex of baby is not known. One patient went against medical advice and we are unable to ascertain sex of baby. In the non-eclamptic group, one patient delivered twin girl babies, both have been entered accounting for the number disparity.

Birth weight of baby [if applicable]:

In the eclamptic group, one patient went against medical advice and we are unable to ascertain weight of baby. In the eclamptic group, one patient had an abortion; therefore weight of baby is not applicable. One of the patient brought unconscious, was admitted to the ICU and expired, hence we were unable to get the details.

Urinary Albumin levels on admission:

Platelet level:

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We did not have any HELLP syndrome in our series though we had lowered levels of platelets in some of our patients [total of 12 - 7 in the eclampsia group and 5 in the non-eclamptic group]. The Blood urea nitrogen and serum creatinine levels were normal in both groups of patients.

Serum uric acid Levels:

Maternal outcome:

Duration of hospital stay- in days:

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	eclamptic	Non-eclamptic
mean	11.6	13.28
Median	5	11
Mode	9, 10, 11	11
range	10	28

Non- eclamptic convulsions – Diagnosis:^{11, 12}

DISCUSSION: Most, if not all the series published have taken only eclamptic convulsions. We are unable to compare with other series on non-eclamptic convulsions. So they have been put as a separate column in the tables.

Booking:

	Our series		Varawalla ²	Agarwal et al ⁴	Yadav et al ⁵	Majhi et al ⁶
	Eclampsia	Non-eclamptic				
Booked	58 %	66 %	54.8 %	8 %	7.4 %	17.67 %
Unbooked	42 %	34 %	45.2 %	92 %	92.6 %	82.32 %

Our series when compared with some of the more recent series, have increasing government and FOGSI action to ensure that all patients who are pregnant are booked.

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Age:

Age [years]	Our series		Devi et al ¹	Agarwal et al ⁴	Yadav et al ⁵	Majhi et al ⁶	Gupta et al ⁷
	Eclamptic	Non-eclamptic					
<18	0	0	60 80 %	<20 =31 %	83.3%	<20=58.5 %	20 %
18-25	75 %	50 %	20			20-25=20.52 %	53 %
26-30	16 %	33 %	16 %			15.62 %	26
30-35	0	16%	4%	18 %		3.99 %	0
>35	8 %	0				1.71 %	0

Our series also compares favorably with other series that patients in the 18-25years age group have the most number of convulsions.

Gravida:

Gravida	Our series		Devi et al ¹	Varawalla et al ²	Agarwal et al ⁴	Yadav et al ⁵	Majhi et al ⁶	Gupta et al ⁷	Hangarga et al ⁸	Samal et al ⁹
	Eclampsia	Non-eclamptic								
Primi	75 %	20 %	75%	67.9%	62%	70 %	88.37 %	80%	69 %	60%
Multi	25 %	80%	25%	32.1%	38 %	30 %	11.63%	20%	31%	40 %

We also have a majority of primis having convulsions. It is only in the non-eclamptic group that we have more multis, but in view of the small sample size further studies are needed to confirm this.

Incidence:

	Our series	Devi et al ¹	Varawalla ²	Agarwal et al ⁴	Yadav et al ⁵	Majhi et al ⁶	Samal et al ⁹
Eclampsia	0.27 %	1.4 %	0.179 %	0.58 %	0.9 %	2.79 %	1.45 %
Non-eclampsia	0.139 %						

Our incidence of eclampsia is on the lower side but this could be due to the fact that we treat all PIH aggressively and prevent the development of eclampsia. The increased booking also ensures that eclampsia is less. The study by Varawalla et al² shows that increased booking decreases eclampsia incidence.

History of PIH/ eclampsia/ epilepsy in previous pregnancy:

	Our series		Yadav et al ⁵
	Eclampsia	Non- eclamptic	
No history	61.5 %	83 %	
Prev. h/o PIH / eclampsia	30 %		1.85 %
Present h/o PIH	0	17 %	
Prev. h/o epilepsy	7.6 %		

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Admission BP:

BP	Our series		Devi et al ¹	Agarwal et al ^{4*}	Yadav et al ^{5*}	Gupta et al ⁷	Samal et al ⁹
	Eclamptic	Non-eclamptic					
Systolic<130	9 %	66 %		<140 = 9%	3.7 %	0	1%
Systolic >130	91 %	34 %		140-160 = 16 % SBP>160 & DBP >110 = 67 % >200 = 19 %		100	99%
Diastolic<90	9 %	66 %	<120 = 53 %	9 %	3.7 %	13	4%
Diastolic >90	91 %	34 %	>120 =47 %	42 %	>120= 39%	87	96%

* Non-exclusive

The higher the admission BP both systolic / diastolic the greater the chance of eclampsia is replicated in other studies.

Consciousness on admission:

Level	Our series		Yadav et al ⁵
	Eclamptic	Non-eclamptic	
Conscious	54 %	66 %	7.4 %
Drowsy	36 %	16 %	
Unconscious	9%	16 %	92.6 %

Most of our cases were conscious on admission which is good.

Antenatal vs Postnatal convulsions:

	Our series		Devi et al ¹	Varawalla ²	Agarwal et al ⁴	Yadav et al ⁵	Majhi et al ⁶	Gupta et al ⁷	Hangarga et al ⁸	Samal et al ⁹
	Eclamptic	Non-eclamptic								
Antepartum	78 %	25 %	86 %	90.4 %	53.54 %	53.7 %	38.65	60	68 %	81%
Intrapartum & Postpartum	22%	75 %	14 %	9.6 %	46.46 %	46.3 %	61.15	40	32%	19%

All studies in eclampsia show that the antepartum convulsions are the commonest. In converse the non-eclamptic convulsions are more common in postpartum period. Hence any patient having a postpartum convulsion should be investigated to rule out a non-eclamptic cause for the convulsion.

Gestational age at convulsions:

GA	Our series		Devi et al ¹	Varawalla ²	Agarwal et al ⁴	Gupta et al ⁷	Hangarga et al ⁸	Samal et al ⁹
	Eclamptic	Non- eclamptic						
<28	8 %	16 %				0		12%
28-37	42 %	16 %	40 %	42.9 %	62 %	53%	26%	30-34=31%
37-40	33 %	16 %	30 %	57.1 %	38 %	47%	47 %	>35=56%
>40	0	0					25%	

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We had a higher incidence of preterm patients with convulsion which is similar to that seen in Devi et al, Agarwal et al & Gupta et al.

Number of Convulsions:

Number	Our series		Yadav et al ⁵	Samal et al ⁹
	Non-eclamptic	Eclamptic		
1	60 %	36 %	61 %	43%
2	20 %	36 %		
3	0	18 %		
4	20 %	0	39 %	56%
>4	0	9 %		

Most of our patients had only one convulsion which can be explained by the fact that we start Pritchard regime immediately and empty the uterus quickly preventing further convulsions.

Mode of termination:

Mode	Our series		Devi et al ¹	Varawalla et al ²	Agarwal et al ⁴	Yadav et al ⁵	Majhi et al ⁶	Gupta et al ⁷	Samal et al ⁹
	Eclamptic	Non-eclamptic							
Abortion		16 %							
Vaginal	18 %	33 %	91 %	73.7 %	84.4 %	97%	88.48	94 %	73%
LSCS	82 %	50 %	9 %	26.3 %	11.2 %	3 %	10.52	6 %	27%

Our incidence of abdominal delivery is very high but in our defense we respectfully submit that we have no maternal death in the eclampsia group and have reduced number of convulsions.

Sex of the baby:

Sex	Our series		Jain et al ³	Vatten. J.L ^{10*}
	Eclamptic	Non-eclamptic		
Male	36 %	16 %	70 %	52 %
Female	64 %	84 %	30%	48%

* In PIH pregnancies

We found that we had a higher number of girl babies in both the eclamptic and non-eclamptic groups which are not consistent with other studies. The small sample size is probably behind this apparent bias. Further studies are needed to prove or disprove this.

Urine Albumin levels:

	Our series		Agarwal et al ⁴
	Non-eclampsia	Eclampsia	
Nil	66 %	0	10.3 %
Trace	16 %	16 %	
1+	16%	25 %	
2+	0	25%	87 %
3+	0	25%	
4+	0	8 %	

Again a high urine albumin is seen in most of the eclampsia cases which is consistent with other studies. The low levels of Urine albumin in our non-eclamptic are important. Whenever we see

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a patient with convulsion who has a low urine albumin level it should put us on the guard that the convulsion may not be eclampsia and other possibilities should be considered.

Maternal outcome:

Maternal outcome	Our series		Devi et al ¹	Varawalla ²	Agarwal et al ⁴	Yadav et al ⁵	Majhi et al ⁶	Samal et al ⁹
	Eclamptic	Non-eclamptic						
Alive	100 %	83 %	89.7 %	96.4 %	92.25 %	92.6 %	88.72%	95%
Dead	0	17 %	10.3 %	3.6 %	7.75 %	7.4%	11.28%	5%

We had a nil maternal mortality for eclampsia which is commendable. The only death in the non-eclamptic group came from a patient with postnatal convulsion who was referred late and was diagnosed with cortical venous thrombosis. In spite of our best efforts we lost her.¹²

CONCLUSION: The only drawback in this study is the small sample size. These being a preliminary study, further larger studies are required to get the true incidence of non-eclamptic convulsions. The fact that one third of our series can be attributed to non-eclamptic convulsions highlights the need for larger studies to find out the real incidence of this condition. We would like to highlight the fact that all convulsions in pregnancy are not eclampsia and a thorough clinical examination with appropriate laboratory and radiological examination would help us to arrive at the correct diagnosis.

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ORIGINAL ARTICLE

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Date of Submission: 22/05/2014.

Date of Peer Review: 23/05/2014.

Date of Acceptance: 30/05/2014.

Date of Publishing: 31/05/2014.