

Role of Serum Prolactin Levels in Differentiate Childhood Seizure Episodes and Conditions Mimicking Seizure Episodes

*Dr. Bhardwaj Narayan Chaudhary¹, Dr. Rajeeva Mishra²

¹Junior Resident (Academic), Dept. of Pediatrics and Neonatology, RIMS, Ranchi.

²MD, DCH, Associate Professor, Department Of Pediatrics and Neonatology, RIMS, Ranchi.

Corresponding author: Dr. Bhardwaj Narayan Chaudhary

Abstract:

Background: Seizure disorder is the most common neurological problem in children. Acute seizures are a common cause of pediatric admission to hospitals.

Objective: This study aimed to determine the role of Serum Prolactin level in different type of Seizures and Seizure like activity in children, and correlate with the post-ictal duration. Many patients being treated as epileptics are not actually so. Moreover the coexistence of pseudoseizure with epilepsy is high. There is no single exposure, biochemical marker to differentiate between epileptic and non-epileptic seizures.

Materials and methods: This study was carried out in the department of Pediatrics and Neonatology, RIMS, Ranchi from March 2015 to September 2016. The present study was done on 75 cases of study group and 25 cases of control. The study group was divided into three groups of 25 cases each: Group I: (Generalised Tonic Clonic Seizures, Complex Partial Seizure, or Simple Partial Seizure). Group II: (Febrile Convulsion). Group III: (conditions mimicking seizures). Blood was collected within 2 hours of seizure and prolactin levels assayed.

Results: Prolactin levels were significantly high only within Group I. But in other group prolactin level was within normal limit.

Conclusion: The clinical usefulness of post-ictal prolactin estimation is restricted to the positive diagnosis of epileptic seizures.

Keywords: Prolactin, Seizures, Pseudoseizures

Date of Submission: 12-12-2017

Date of acceptance: 23-12-2017

I. Introduction

Seizure disorder is the most common neurological problem in children. EEG in pediatric patient is extremely difficult in struggling child, and sedation may lead to changes in character of waves and interpretation of EEG is difficult. Conditions mimicking Seizure is usually time limited and resembles, or is mistaken for, epilepsy but does not have the characteristic EEG changes that accompanies a true epileptic seizure. Here comes the probable role of serum prolactin level after epileptic seizures. We will analyse that serum prolactin level can be used as a biochemical marker for the diagnosis of seizure disorder.

II. Aims And Objectives

1. To determine the role of serum prolactin level as a biochemical marker in seizure disorders.
2. To find out whether serum prolactin can be used to differentiate true seizures from conditions mimicking seizure in children.

III. Materials And Methods

The study was conducted in admitted patients in pediatrics department of RIMS, Ranchi, aged between 6 months to 16 years of either sex. The estimation of serum prolactin levels were carried out by laboratories in the department of biochemistry, RIMS, Ranchi.

3.1 Selection of the cases for study group: - The cases were divided into four groups, each having 25 members.

Group 1- Consisted of cases with Generalized Tonic Clonic Seizure, Complex Partial Seizure and Simple Partial Seizure.

Group 2- Consisted of typical febrile convulsion.

Group 3- Consisted of conditions mimicking seizures.

Group 4- Control group, admitted for reason other than fever and seizure.

IV. Methodology

Blood was collected after venepuncture of ante-cubital vein using a no. 22 scalp vein needle and it was allowed to drip directly into a sterilized test tube. About 1 ml. of blood was collected, within two hours of occurrence of seizures. The exact interval between episodes of seizure and time of blood sample was noted.

After one hour, the serum was separated and transferred to centrifuge tube. Then it was for 10 minutes at 2500 RPM and the serum was transferred using pasture disposable pipettes to capped vials and stored until analysis at deep Freeze. Serum prolactin estimation was done by chemiluminescence method.

V. Results

5.1 Blood was collected within 2 hours of the seizure and serum prolactin levels were assayed. The following results were made:-

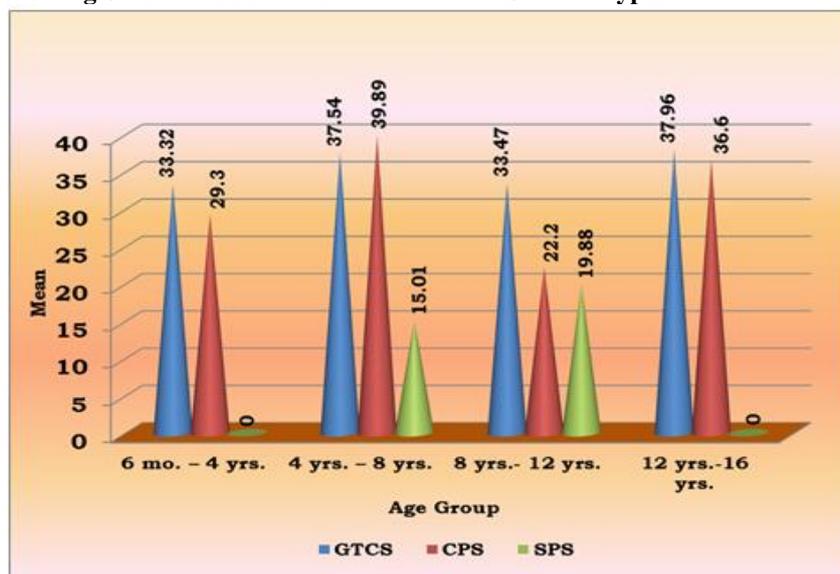
1. Among epileptic seizures, Generalized Tonic Clonic Seizure (60%), Complex Partial Seizure (20%) and Simple Partial Seizure (20%) had significantly elevated level of serum prolactin.
2. The mean post-ictal prolactin level in cases with epileptic seizures was above the normal limit.
3. Serum Prolactin was seen to be raised in cases of GTCS & CPS. The sensitivity & specificity of raised serum Prolactin in diagnosis of epileptic seizure was 64% and 98% respectively.
4. The mean Prolactin level was high in the case with GTCS (80%) and CPS (60%). The mean Prolactin level in present study in cases of GTCS was 37.27 ng/ml and in CPS was 31.44 ng/ml. only one case, out of five with SPS was associated with increased Prolactin. The mean prolactin level in SPS was 17.99 ng/ml.
5. Incidence of conditions mimicking seizures is maximum in 9-12 years age group .Incidence increases with age .
6. Conditions mimicking seizures more common in female (64%) patients than in male (36%) patients.
7. The pseudoseizures comprises of maximum number of cases followed by Breath Holding Spells, Night Terror, and Syncope.
8. Mean Serum Prolactin level were significantly high only within group of epileptic seizure. and within normal limit in cases with febrile convulsion, conditions mimicking seizures, and in Controls.
9. The highest Prolactin level was attained 15 minutes post-ictally ,followed by progressive decline in the levels. Normal levels were observed in all cases with the post-ictal duration more than 100 minutes.

VI. Figures And Tables

Table: Serum Prolactin Level In Different Seizure Types

Age Group	GTCS			CPS			SPS		
	No. of Cases	Prolactin Level (ng/ml)		No. of Cases	Prolactin Level (ng/ml)		No. of Cases	Prolactin Level (ng/ml)	
		Range	Mean		Range	Mean		Range	Mean
6 mo. – 4 yrs.	1	33.32	33.32	2	22.12-36.48	29.3	-	-	-
4 yrs. – 8 yrs.	2	36.62 – 38.46	37.54	1	39.89	39.89	2	13.3-16.72	15.01
8 yrs.- 12 yrs.	6	20.20 – 51.5	33.47	1	22.2	22.2	3	9.32-30	19.88
12 yrs.-16 yrs.	6	22.19 – 56.5	37.96	2	36.6	36.6	-	-	-

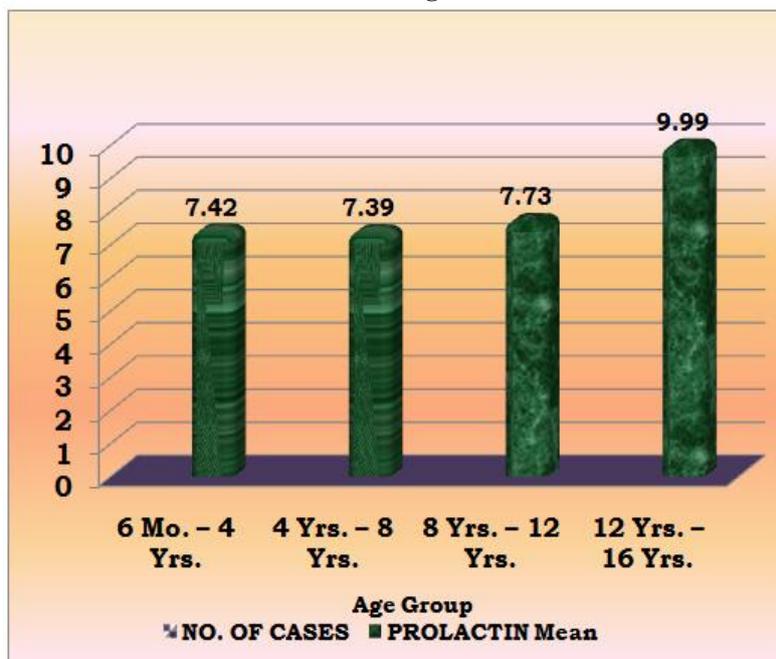
6.1 Histogram showing Serum Prolactin Level in Different Seizure Types



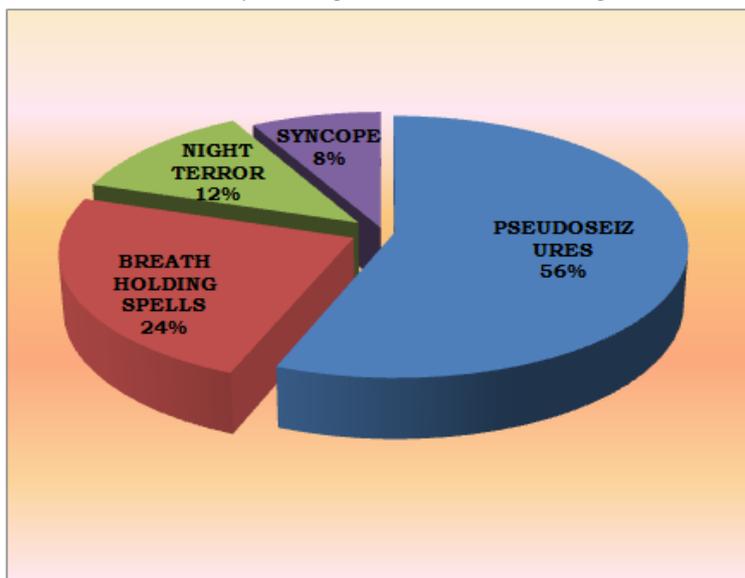
6.2 Serum Prolactin Level In Conditions Mimicking Seizure

Age Group	No. Of Cases	Prolactin Level (Ng/MI)	
		Range	Mean
6 Mo. – 4 Yrs.	5	5.85 – 9.46	7.42
4 Yrs. – 8 Yrs.	5	5.85– 8.69	7.39
8 Yrs. – 12 Yrs.	8	6.21 – 9.42	7.73
12 Yrs. – 16 Yrs.	7	7.61 – 11.65	9.99

6.3 Serum Prolactin Level In Conditions Mimicking Seizure



6.4 Incidence Of Individual Disease Entity Among Conditions Mimicking Seizures

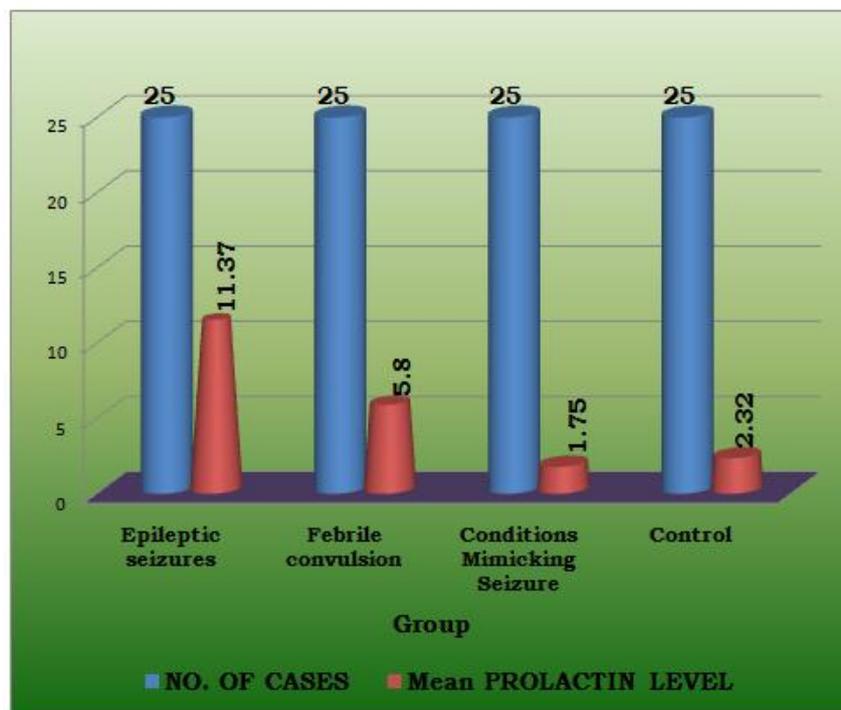


6.5 Prolactin Level In Study And Control Group

Group	No. Of Cases	Prolactin Level (Ng/MI)	
		Mean	Sd
Epileptic Seizures(Gtcs/Cps/Sps)	25	31.36	11.37
Febrile Convulsion	25	10.70	5.80
Conditions Mimicking Seizure	25	8.23	1.75
Control	25	8.07	2.32

Table showing serum Prolactin level in each study group and control group. Only the groups having cases of **epileptic seizure were seen to be having significantly high (P <0.0001)** serum Prolactin level. Among other groups, the mean Post-ictal serum Prolactin level were within normal limit.

6.6 Serum Prolactin Level In Study And ControlGroup



VII. Conclusion

The clinical usefulness of post-ictal prolactin estimation is restricted to the positive diagnosis of epileptic seizures. A positive result is suggestive of GTCS, or Complex partial seizure having occurred. Although it cannot be used exclusively for differentiation between subtypes of epileptic seizures, yet it can easily be applied in cases of diagnostic uncertainty between epileptic and non-epileptic events, before submitting our poor patients to more sophisticated and expensive investigations. Serum prolactin level were significantly high only in epileptic seizures and normal in conditions mimicking seizures. Sample must be taken any time within 60 minutes. Thus serum prolactin estimation can be help in differentiating true generalized seizures from conditions mimicking seizures.

References

- [1]. Nelson Textbook of Pediatrics, 2016-20th edition.
- [2]. King DW, Gallagher BB, Murvin AJ, Smith DB, Marcus DJ, Hartlage LC, et al. Pseudoseizures: Diagnostic evaluation. Neurology . 1982 3.Escueta A, Bascal F, Treiman D. Complex partial seizures on closed circuit television and EEG. Ann Neurol. 1982;292-300. Trimble MR. Serum prolactin in epilepsy and hysteria.Br Med J 1978;1682. Aninoff M.J (1992):Electrodiagnosis in clinical neurology: 3rd edition. 1984;107:569-578.
- [3]. Jeavons PM. The practical management of Epilepsy.1975;1:11-14. Pritchard PB, Wannamaker BB, Sagel J, Daniel CM, Serum Prolactin and Cortisol levels in evaluation of Complex Partial Seizure. Ann Neurol 1983; 14: 27-32.
- [4]. Shah AK, Shein N, Fuerest R. Serum prolactin level . Epilepsia 2001; 42(110):1472.
- [5]. Libman MD, Potvin L, Coupal L, Seizure vs.syncope: J Gen Intern Med 1991; 6(5): 408-12.

*Dr.Bhardwaj Narayan Chaudhary. "Role of Serum Prolactin Levels in Differentiate Childhood Seizure Episodes and Conditions Mimicking Seizure Episodes." IOSR Journal of Dental and Medical Sciences (IOSR-JDMS) 16.12 (2017): 54-57