



Original Research Article

To observe the clinical presentation of seizure disorder in 0-1 month age group

Prachi Goyal¹, Prashant Kumar Choudhary^{1,*}, Ali Mehdi Johar²¹Dept. of Pediatrics, MGM Medical College, Indore, Madhya Pradesh, India²Red Cross Hospital, Mhow, Indore, Madhya Pradesh, India

ARTICLE INFO

Article history:

Received 21-08-2020

Accepted 22-08-2020

Available online 29-09-2020

Keywords:

Incidence

Seizure & Neonates

ABSTRACT

Background: This prospective study was conducted over the period of one year at M.Y. Hospital & Chacha Nehru Bal Chikitsalaya, Indore, in the Department of Pediatrics, M.G.M. Medical College, Indore.

Materials and Methods: Detailed history of present illness with duration of convulsion were enquired. A detailed history of mother during antenatal, natal and post natal period was taken. Type of delivery (vaginal/LSCS ; full term / preterm), enquired about the indication of LSCS. History of labour with particular ref to birth injury, asphyxia (delayed cry), neonatal history regarding jaundice & feeding history, detailed family history in relation to epilepsy convulsion and mental diseases were recorded.

Results: Out of 100 cases 64% were males and 36% were females. Male female ratio was 1.77:1. Male cases were predominantly present in all 3 age groups. Majority of seizures occurred within 24 hrs. P value is not significant. Out of 100 cases 43 had tonic convulsions, 38 had subtle, and 19 had focal convulsions. 43 neonates had seizures in 1st 24 hrs. Subtle seizures (60%) were most common followed by tonic seizures (32.5%) and then focal seizures (7.5%). In 2 – 7 day age group tonic seizures (42.8%) were most common followed by focal seizures (38%). In > 7 day age group also tonic seizures (73.6%) were most common. P value was < 0.001.

Conclusion: Detailed clinical examination was done & investigations were carried out in all patients. Cranial USG, EEG, & CT scan were done as per requirement. Out of total 100 cases 74 were full term & 26 were preterm. In our study maximum no. of cases developed seizure within 1st 24 hrs (43%) of life followed by 42% in 2–7 day age group & 15% after 7 days. Convulsions were more common in males (64%) in all age group.

© 2020 Published by Innovative Publication. This is an open access article under the CC BY-NC license (<https://creativecommons.org/licenses/by-nc/4.0/>)

1. Introduction

Seizures represent the most distinctive signal of neurological disease in the newborn period and these convulsive phenomena are the most frequent of the overt manifestations of neonatal neurological disorders.¹

The incidence of neonatal seizures varies with birth weight, with values as high as 57.5 per 1000 in infants with birth weights lower than 1500 g, but only 2.8 per 1000 for infants with birth weights of 2500 to 3999 g. this is far more than incidence in older children and adults.¹ Although etiology of seizures is multiple & diverse in early infancy

only few of these conditions account for most seizures. Very few seizures during the newborn period are idiopathic.² The prognosis is variable, determined primarily by underlying etiology.

Many parts of brain are quite immature at neonatal and early infancy period. This immaturity implies selective vulnerability as well as selective resistance to specific disease processes. Rapid brain growth imposes rigid constraints. A considerable body of evidence suggests that the consequence of seizures in the immature brain is considerably different from those in adults.³ Approximately 80% of the cells in the human brain are generated after birth and mitotic activity continues in the human cerebrum for at least 1 year postnatally.

* Corresponding author.

E-mail address: varuny.indore09@gmail.com (P. K. Choudhary).

2. Materials and Methods

This prospective study was conducted over the period of one year at M.Y. Hospital & Chacha Nehru Bal Chikitsalaya, Indore, in the Department of Pediatrics, M.G.M. Medical College, Indore.

2.1. Duration

2.1.1. Case selection

100 consecutive cases of seizure admitted in our NICU were included in the study. The inclusion criteria was the cases either presenting with seizures or who developed seizures during hospital stay. Cases were studied from clinical & biochemical aspects.

2.2. Clinical study

Detailed history of present illness with duration of convulsion were enquired. A detailed history of mother during antenatal, natal and post natal period was taken. Type of delivery (vaginal/ LSCS; full term / preterm), enquired about the indication of LSCS. History of labour with particular ref to birth injury, asphyxia (delayed cry), neonatal history regarding jaundice & feeding history, detailed family history in relation to epilepsy convulsion and mental diseases were recorded.

Examination of all cases was conducted after patients' admission. General examination was carried out along with complete anthropometric measurement. Thorough neurological examination followed by examination of other system was carried out in every case. In each case type of convulsion, their duration & frequency was recorded in detail. Cases of birth asphyxia were staged according to Sarnat staging criteria.

2.3. Investigation

1. Hematological examination:

- a) Hb
- b) Erythrocyte and leucocyte count
- c) Differential WBC count

2. Biochemical:

- a) Blood sugar – hypoglycemia was labeled if blood glucose < 45 mg/dl
- b) Serum calcium – hypocalcemia labeled with S.Ca<7 mg%
- c) Serum sodium & potassium : Hyponatremia <130 meq/l Hyponatremia >150 meq/l Hypokalemia < 3.5 meq/l Hyperkalemia > 5.5 meq/l

3. CSF examination: Lumbar puncture was done on all the babies when meningitis was suspected or where the cause of seizure could not be explained.

Procedure: under all aseptic precaution CSF was obtained by lumbar puncture and two sample each of 3 ml were collected, one in a plain vial for routine examination

and other in dry sterilized tube for culture. Tension & appearance of the fluid was noted and Pandey's test was performed.

CSF cell count was done with the help of Newbars chamber. A smear made from the centrifuged sediment and stained with leishman stain & cell were counted.

Bacteriological examination : Smear were obtained by gram's method and stained with methylene blue, and studied for presence of organisms. Zeihl nelson method was used for acid fast bacilli. The centrifuged deposits were cultured.

Out of four atleast two were required positive for diagnosis:

- a) Positive CSF culture
- b) CSF pleocytosis (> 20 cells/mm³ with a predominance of polymorphs)
- c) Decreased CSF sugar <40 mg% or less than 50% of simultaneously obtained blood sugar sample with CSF protein > 40 mg%.
- d) Definitive bacteria on a stained smear of the spinal fluid.

4. CRANIAL USG: was done for evaluation of size of ventricles and possible intraventricular hemorrhage. Ultra sonic scanner is used by directing waves through anterior fontanelle which serves as acoustic window to obtain best image and echoes.

5. EEG: was done within 8 days of seizure.

6. CT SCAN / MRI

Data were analyzed using Chi2 test. P value < 0.05 was taken as significant.

3. Results

Table 1 Out of 100 cases 64% were males and 36% were females. Male female ratio was 1.77:1. Male cases were predominantly present in all 3 age groups. Majority of seizures occurred within 24 hrs. P value is not significant.

Table 2 Out of 100 cases 43 had tonic convulsions, 38 had subtle, and 19 had focal convulsions.

Table 3 shows that 43 neonates had seizures in 1st 24 hrs. Subtle seizures (60%) were most common followed by tonic seizures (32.5%) and then focal seizures (7.5%). In 2 – 7 day age group tonic seizures (42.8%) were most common followed by focal seizures (38%). In > 7 day age group also tonic seizures (73.6%) were most common. P value was < 0.001.

4. Discussion

4.1. Age wise distribution

In our study majority of seizures occurred within 1st 24 hrs (43%). Between 2 to 7 days 42% babies had seizure and after 7 days 15% had seizure.

Dr. Maya Prasad et al. (2010)⁴ reported that 43.5% cases had seizures within 1st 24 hrs of life, 34% in 2 – 3 days, and 12.5% after 3 days.

Table 1: Age & Sex Wise Distribution

Age	Male	Female	Total
<1day	31	12	43
2–7day	23	19	42
>7day	10	5	15
Total	64	36	100

Table 2: Types of seizures

Type of seizures	Male	Female	Total
Subtle	25 (65.7%)	13 (34.3%)	38
Tonic	27 (62.7%)	16 (37.3%)	43
Focal/Multifocal	12 (63%)	7 (37%)	19
Total	64	36	100

Table 3: Type of seizures according to day of onset

Type of seizure	<1 day	2 – 7 day	> 7 day	Total	P Value
Subtle	26(60%)	8 (19.2%)	4 (26.4%)	38	< 0.001
Tonic	14(32.5%)	18(42.8%)	11(73.6%)	43	< 0.001
Focal/ multifocal	3(7.5%)	16(38%)	0	19	< 0.001
Total	43	42	15	100	

Mehrotra et al. (1980) reported⁵ 43.7% case had convulsion within 1st 3 days, 35% in 4 – 7 days, 21.2% from 8th to 30th day of life.

Garg et al. (1972)⁶ reported out of 149 case 38.72% had onset of seizures within 1st 3 days, on 3rd day the chance of seizure was minimal, 26.8% developed seizure within 4 – 7 day, 22.8% within 8 – 30 day.

4.2. Type of convulsion

Out of total 100 cases most common presentation were of tonic seizures (43%) followed by subtle seizures (38%) and focal seizures (19%).

Nirupama et al. (2000)⁷ reported subtle seizures as the most common type of seizure followed by multifocal clonic type.

Singh et al. (2004)⁸ reported subtle seizure as commonest type. Their observation was similar to age old observation mentioned in texts. In contrast, in our study tonic seizures were more prevalent than subtle seizure.

4.3. Type of seizure according to day of onset

When we see the distribution of type of seizures according to day of onset, we found that subtle seizures were most common (60%) on 1st day of life. In the age group of 2 to 7 days most common type were tonic seizures(42%) followed by focal clonic seizures (38%). After 7 days tonic seizures (73%) were most common. P value < 0.001.

This difference is probably due to different etiology underlying different type of seizure at different age.

5. Conclusion

Detailed clinical examination was done & investigations were carried out in all patients. Cranial USG, EEG, & CT scan were done as per requirement.

Out of total 100 cases 74 were full term & 26 were preterm. In our study maximum no. of cases developed seizure within 1st 24 hrs (43%) of life followed by 42% in 2–7 day age group & 15% after 7 days. Convulsions were more common in males (64%) in all age group.

6. Source of Funding

None.

7. Conflict of Interest

None.

References

- Joseph VJ. Neonatal Seizures, Neurology of the new born;. p. 203–37.
- Jatinder GS, Virendirjit, Verdi S, Parmar VR. Benign familial neonatal convulsion . *Indian Pediatr.* 2002;39:292–5.
- Iaroia N. Current controversies in diagnosis and management of neonatal seizure. *Indian Pediatr.* 2000;37:367–72.
- Prasad M, Iype M, Nair P, Geetha S, Kailas L, Kailas L, et al.. Neonatal Seizures - A Profile of the Etiology and time of occurrence; 2011.
- Mehrotra SN, Agarwal VK, Abha D, Prem K. A study of convulsive disorder in neonatal period. *Pediatrics Clinics.* 1980;17.
- Garg PK. Neonatal seizures. *Indian J Pediatr.* 1972;39(6):208–13.
- Iaroia N. Current controversies in diagnosis and management of neonatal seizure. *Indian Pediatr.* 2000;37:367–72.
- Singh M. Metabolic disorder, care of the new born; 2004.

Author biography

Prachi Goyal Assistant Professor

Prashant Kumar Choudhary Assistant Professor

Ali Mehdi Johar Paediatric Consultant

Cite this article: Goyal P, Choudhary PK, Johar AM. **To observe the clinical presentation of seizure disorder in 0-1 month age group.** *IP Int J Med Paediatr Oncol* 2020;6(3):110-113.