Original Research Article

A study efficacy of pyridoxine in early-onset idiopathic intractable seizures in pediatric patient at tertiary health care center

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Abstract

Background: Pyridoxine is used for management of seizure disorder in three settings viz., seizures that respond to pyridoxine and require life-long supplementation with therapeutic doses of pyridoxine, pyridoxine dependent seizures **Aims and Objectives:** study Efficacy of Pyridoxine in Early-Onset Idiopathic Intractable Seizures in pediatric patient at tertiary health care center. **Methodology:** This was a cross-sectional study carried out in the patients of Early-Onset Idiopathic Intractable Seizures in pediatric patient during the one year period i.e. June 2017 to June 2018, there were 64 pediatric patients with Idiopathic Intractable Seizures were enrolled for the study. All details of the patients like Age, sex etc. was noted. All the patients were undergone EEG testing. Out of 64 patients Group A received 30 mg/kg/day pyridoxine with 4 mg/kg/day of oral prednisolone Group B received 4 mg/kg/day of oral prednisolone and 14, 15 randomly. The outcome of patients like episodes of seizure etc. was noted after 1 month of treatment. The statistical analysis was done by Chi-square test and analyzed by SPSS 19 version software. Result: In our study the average age in both the group was comparable with each other i.e. 3 ±1.21Yrs. and 3.52±1.31 Yrs. ($p>0.05$, $t=1.12$,$df=62$). The ratio of Male and Female was 2.9: 1 and 1.90: 1 was comparable with each other ($X2=0.29$, $df=1$,$p>0.05$). Complete seizure freedom was found in 34.38% and 9.38%; >50% seizure reduction but not complete cessation in 40.63% and 28.13%; <50% seizure reduction in 25.00% and 62.50% respectively in Group A and Group B which was statistically significant ($X2=10.44$, $df=2$,$p<0.005$). EEG findings Normal in 37.50% and 12.50%, Decreased Epileptiform discharges in 46.88% and 31.25%, Persistent Epileptiform discharges in 15.63% and 56.25% respectively in Group A and Group B this observed difference was statistically significant ($X2=12.35$, $df=2$,$p<0.002$) **Conclusion:** It can be concluded from our study that the patients who received the pyridoxine treatment improved much as compared to not received so the role of pyridoxine in the treatment of intractable seizure should not be underestimated.

Key Word: Pyridoxine, Early-Onset Idiopathic Intractable Seizures, EEG

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INTRODUCTION

Pyridoxine is used for management of seizure disorder in three settings viz., seizures that respond to pyridoxine and require life-long supplementation with therapeutic doses of pyridoxine, pyridoxine dependent seizures (PDS, MIM 266100); early-onset seizures responsive to pyridoxine but not requiring life-long pyridoxine supplementation, pyridoxine-responsive seizures (PRS); and, high-dose pyridoxine for the treatment of major seizure disorders of young children e.g., West syndrome[1]. It has been suggested that pyridoxine dependency is often underdiagnosed, both because of occasional atypical presentation[2], and infrequent use of pyridoxine in

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intractable seizures of early onset in infants and children in India[3, 4].So in our study we have studied efficacy of Pyridoxine in Early-Onset Idiopathic Intractable Seizures in pediatric patient at tertiary health care center.

METHODOLOGY

This was a cross-sectional study carried out in the patients of Early-Onset Idiopathic Intractable Seizures in pediatric patient during the one year period i.e. June 2017 to June 2018, there were 64 pediatric patients with Idiopathic Intractable Seizures were enrolled for the study. All details of the patients like Age, sex etc. wasnoted. All the patients were undergone EEG testing. Out of 64 patients **Group A** received 30 mg/kg/day pyridoxine with 4 mg/kg/day of oral prednisolone **Group B** received 4 mg/kg/day of oral prednisoloneand[14,15] randomly. The outcome of patients like episodes of seizure etc. was noted after 1 month of treatment. The statistical analysis was done by Chi-square test and analyzed by SPSS 19 version software.

RESULT

Table 1: Distribution of the patients in two groups with respect to age and sex

	Group A (n=32)	Group B (n=32)	p-value
Average age (Yrs.)	3 ±1.21	3.52±1.31	p>0.05, t=1.12,df=62
Sex			
Male	23	21	**(X^2=**0.29,df=1,p>0.05)
Female	9	11	

The average age in both the group was comparable with each other i.e. 3 ±1.21Yrs. and 3.52±1.31 Yrs. (p>0.05, t=1.12,df=62). The ratio of Male and Female was 2.9: 1 and 1.90: 1 was comparable with each other (X^2=0.29, df=1,p>0.05).

Table 2: Distribution of the patients as per the treatment outcome

Outcome	Group A (n=32)	Group B (n=32)
Complete seizure freedom	11(34.38)	3(9.38)
>50% seizure reduction but not complete cessation	13(40.63)	9(28.13)
<50% seizure reduction	8(25.00)	20(62.50)
Total	32(100.00)	32(100.00)

(X^2=10.44, df=2, p<0.005)

Complete seizure freedom was found in 34.38% and 9.38%; >50% seizure reduction but not complete cessation in 40.63% and 28.13%; <50% seizure reduction in 25.00% and 62.50% respectively in Group A and Group B which was statistically significant (X^2=10.44, df=2, p<0.005)

Table 3: Distribution of the patients as per the EEG findings

EEG findings	Group A (n=32)	Group B (n=32)
EEG findings Normal	12(37.50)	4(12.50)
Decreased Epileptiform discharges	15(46.88)	10(31.25)
Persistent Epileptiform discharges	5(15.63)	18(56.25)
Total	32(100.00)	32(100.00)

(X^2=12.35, df=2, p<0.002)

EEG findings Normal in 37.50% and 12.50% , Decreased Epileptiform discharges in 46.88% and 31.25%, Persistent Epileptiform discharges in 15.63% and 56.25% respectively in Group A and Group B this observed difference was statistically significant (X^2=12.35, df=2,p<0.002)

DISCUSSION

Epilepsy accounts for about 1% of global disease burden.[10] In India, 8–10 million people suffer from epilepsy and about 70%–80% of these patients can be controlled medically if proper diagnosis and appropriate treatment is made available at the earliest. Rest of the patients may need palliative or disease-modifying surgery. The disability with reference to the quality of life of patients as well the impact on family members is enormous. There is 1%/year risk of mortality due to seizure-related complications in these patients.[11] The value of pyridoxine (PN) in the treatment of epilepsy cannot be overemphasised.[12, 13] Since the report of Spies *et al* in 1940, 6 several studies regarding the use of PN in the treatment of epilepsy have been reported This pyridoxine (Vitamin B6) deficiency seizures condition was first described in 1954 by Hunt *et al*., as responsive to an intravenous multivitamin.[5] The point prevalence of pyridoxine (Vitamin B6) deficiency seizures in the UK is 1/687000 and birth incidence is 1/783,000 population, and approximately only 100 such cases have been reported so far in literature.[6] Pyridoxine-dependent

seizures are a group of extremely rare autosomal recessive disorder which is a typical example of metabolic epilepsy. These seizures occur despite normal Vitamin B6 level due to defective binding of pyridoxine to its apoenzyme which converts glutamic acid to GABA. Therefore, GABA levels are very much reduced causing very much lowered seizure threshold.[7,8] Seizures can start prenatally, natally, postnatally, or neonatal period and typically resistant to antiepileptic drugs. The underlying genetic defect has been identified as a mutation in ALDH7A1 causing deficiency of alpha-aminoadipic semialdehyde dehydrogenase. This is involved in cerebral lysine catabolism.[8] There are atypical types of pyridoxine-dependent epilepsies which may first respond to anticonvulsants but relapse later, seizures not controlled by pyridoxine initially but which respond later.[9] In our study The average age in both the group was comparable with each other i.e. 3 ±1.21Yrs. and 3.52±1.31 Yrs. ($p>0.05$, $t=1.12$,$df=62$) . The ratio of Male and Female was 2.9:1 and 1.90: 1 was comparable with each other ($X^2=0.29$,$df=1$,$p>0.05$). Complete seizure freedom was found in 34.38% and 9.38%; >50% seizure reduction but not complete cessation in 40.63% and 28.13%; <50% seizure reduction in 25.00% and 62.50% respectively in Group A and Group B which was statistically significant ($X^2=10.44$, $df=2$,$p<0.005$) EEG findings Normal in 37.50% and 12.50%, Decreased Epileptiform discharges in 46.88% and 31.25%, Persistent Epileptiform discharges in 15.63% and 56.25% respectively in Group A and Group B this observed difference was statistically significant ($X^2=12.35$, $df=2$, $p<0.002$)

CONCLUSION

It can be concluded from our study that the patients who received the pyridoxine treatment improved much as compared to not received so the role of pyridoxine in the treatment of intractable seizure should not be underestimated.

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