



AMERICAN JOURNAL OF PHARMTECH RESEARCH

Journal home page: <http://www.ajptr.com/>

Evaluation of Relationship Between Variables Causative Factors Associated With Febrile Seizure-A Prospective Study

Neethu J^{1*}, Anjaly S Kumar¹, Manuja VS¹, Nithika Chacko¹, Renjith Raj SA¹

1. Department of Pharmacy Practice, Sree Krishna College of Pharmacy and Research Centre, Thiruvananthapuram, Kerala

ABSTRACT

AIM :Febrile seizure is the one of the most common convulsive disorders, mainly occur following high fever without any evidence of underlying health issues, typically in the children of age of upto 6 years. The aim of this study was to assess the relationship between variable causative factor involved in the incidence of febrile convulsions between the children referred to Cosmopolitan Hospital, Thiruvananthapuram, Kerala (India). This was a hospital based prospective observational study. The main purpose of this study was to identify the relationship between variable risk factors associated with febrile convulsion in children. The children of age upto 6 years were studied to assess the relationship between the types of seizure ,gender ,electrolytes and variable disease conditions which leads to the development of convulsive event in children. The age and febrile seizure has a correlation that the children below 3 years is more hospitalized with febrile seizure. Viral fever associated febrile seizure shows more prevalence. Type of seizure and gender do not have any positive correlation in this study. Lab data provide significant positive correlation with the incidence febrile seizure. Pregnancy related complications and antenatal and natal complications also shows a significant relationship to the febrile seizure. Decreased breast feeding in the children also leads to the events of febrile seizure. family history of febrile seizure also provide a major relationship with febrile convu. Risk factor such as age, body temperature, family history, breastfeeding, low birth weight, cesarean, lab data's that are involved in the development of febrile seizure were identified.

Keywords: Febrile convulsion, gender, viral fever, electrolytes

*Corresponding Author Email: neeth245@gmail.com

Received 15 March 2018, Accepted 23 March 2018

Please cite this article as: Neethu J *et al.*, Evaluation of Relationship Between Variables Causative Factors Associated With Febrile Seizure-A Prospective Study. American Journal of PharmTech Research 2018.

INTRODUCTION

The febrile seizure is a fit or seizure is one of most common type of convulsive event associated with high grade body temperature without any evidence of any kind of neurological infections or any defined cause. Pathophysiology associated with febrile seizure is unclear. It is suggested that febrile seizure is an age dependent response of the immature brain to fever, as studies in animal models have suggested that during the brain maturation process, there is an enhanced neuronal excitability³. Febrile seizure is one of the major reason for pediatric emergency in the worldwide.

Febrile convulsive events are more common in children between the age of 6 months to 5 years. Febrile seizures are of two types, simple febrile seizure and complex febrile seizure. Febrile seizure is an age dependent condition and are uncommon before 6 months and after 5 years of age, with the peak incidence at 18 months. Febrile convulsive events do not happen due to infection of central nervous system or metabolic disorders. Febrile convulsive events do not cause any kind of brain damage. 98% of children who have experienced do not develop epilepsy.

Children's with a febrile convulsive event have a body temperature greater than 102 degrees F. Children's upto the age of 6 years temperature regulatory system of body is not fully developed. Many studies were conducted to assess the various risk factors involved in the development of febrile convulsive event in the children. This help to provide an awareness to the parents to take necessary precaution at time of seizure episodes.

Several studies have attempted to identify the risk factors associated with febrile seizure. Febrile convulsive event is generated from both genetic and environmental factors[5]. Positive family history of febrile convulsive event in children with febrile seizure is one of the major identical risk factor. Bacterial as well as viral infections provide a chance to develop fever associated seizure in children and it is also considered as significant factor. In this study we aimed to assess the relationship between variable risk factors like gender, diseased conditions, body electrolytes and also the type of seizure and there involvement in the occurrence febrile convulsive event.

MATERIALS AND METHOD

This was a hospital based prospective observational study conducted in the department of pediatrics, Cosmopolitan hospital Pvt ltd, Thiruvananthapuram, Kerala, India from February 2017

During this study, twenty five cases were referred. Patients with the background of other neurological or metabolic conditions were excluded from the study. Both gender of children in the age of 6 months to 6 years were included in the study. All records of the 6 months to 6 years age children who were hospitalized due to febrile convulsive event associated with high grade body temperature due to variable disease conditions like UTI, URTI, viral fever, pneumonia, otitis media, gastroesophageal infections, vaccine associated clinical conditions were referred.

The data collection tool was a preforma including in formations such as demographics details of the patients including age, gender, past history of seizure, family history of seizure, variable background clinical conditions like otitis media, pneumonia, viral fever, URTI, UTI, gastroesophageal diseases. Vaccine associated clinical conditions were also collected. Body temperature of the patient, type of seizure, residential location, the amount of potassium, sodium and calcium as well as hemoglobin, white blood cells and platelet count and blood sugar level. Day care attendance of the patients were also including in the preforma. Breast feeding duration, birth weight, premature birth, cesarian, labour with vacuum or forceps, pregnancy related complications, maternal diseases, coffee consumptions are also referred. The information regarding each case was recorded in the preforma by information collected from the case records and by directly interfering the parents of patients with febrile seizure.

A written consent form approved by the ethical committee of Cosmopolitan hospital Pvt ltd ,Thiruvananthapuram was used to collect the willingness to participate in the study by the of parents of children with febrile seizure.

The data thus collected in the preforma was analysed by using SPSS (Statistical Package for Social Sciences). Chi-square test, co-relation analysis for the goodness of fit and test for association and Mean square test were employees in the study for the analysis.

RESULTS AND DISCUSSION

During this study period, a total of twenty five patients between the age of 6 months to 6 years were studied. The table. 1 shows the number of children hospitalized due to febrile seizure, the majority of the patients aged below 3 years.

The table.2 shows that the majority patients admitted with febrile seizure are male.

The table.3shows that the cross tabulation of age and frequency of seizure shows that children of age upto 3 years have 1 episodes of febrile seizure.

The table.4 shows the analysis of body temperature of the children with febrile seizure. Analysis reveals that 60% of children with febrile seizure have a body temperature of above 101.6 F

The table.5 shows that analysis of type of seizure shows that majority of the patients have GTC seizure and this is followed by typical seizure.

The table.6 shows that analysis of fever before seizure shows that the 80% of patients have fever for one day and 20% of the respondents have fever for more than one day.

The table.7 shows that the co-morbid conditions of the child patients shows that majority of them is suffering from viral fever. This is followed by viral fever and URTI as it is suffering by 28% students

The table.8 shows that analysis of breast feeding duration shows that majority of the child fed only less than 1 year. Here 36% of the respondents remain neutral as they hesitate to express their opinion.

The table.9 shows that analysis of maternal condition during pregnancy shows that majority of them have cesarean and this is followed by pregnancy associated diseases and coffee consumption and cesarean.

The table.10 shows the analysis about the antenatal and natal complication clear that majority of them are having the complication of premature birth.

The table.11 shows that analysis of family history in patients with febrile reveals that most of the patients shows family history of febrile seizure.

The table.12 shows the history of febrile seizure and reveals that most of the respondents do not have a history of febrile seizure.

The table.13 shows the age of occurrence of febrile seizure in children reveals that most of correspondents are below 3 years having febrile seizure.

Table.14 shows the correlation between gender of the respondents and type of seizure are negative correlated

Table.15 shows the correlation between type of seizure and hemoglobin , platelets, sodium, magnesium, are positively correlated, therefore whenever increase these variable also increases.

Table 1: Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Up to 3 years	21	84.0	84.0	84.0
	Above 3years	4	16.0	16.0	100.0
	Total	25	100.0	100.0	

Table 2: Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	19	76.0	76.0	76.0
	Female	6	24.0	24.0	100.0
	Total	25	100.0	100.0	

Table 3: Age and Frequency Cross Tabulation

		Frequency of seizure		Total
		1Episode	More than one Episode	
Age	Up to 3 years	17	4	21
	Above 3 years	2	2	4
Total		19	6	25

Table4: Body temperature

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	99.6-100.6	3	12.0	12.0	12.0
	100.6-101.6	7	28.0	28.0	40.0
	above 101.6	15	60.0	60.0	100.0
	Total	25	100.0	100.0	

Table 5: Type of Seizure

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Simple	2	8.0	8.0	8.0
	GTC seizure	7	28.0	28.0	36.0
	Complex	1	4.0	4.0	40.0
	Typical	4	16.0	16.0	56.0
	GTC and Complex seizure	3	12.0	12.0	68.0
	GTC and Typical	3	12.0	12.0	80.0
	GTC and Atypical	3	12.0	12.0	92.0
	Simple and GTC seizure	2	8.0	8.0	100.0
	Total	25	100.0	100.0	

Table 6: Duration of Fever before Seizure

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	One day	20	80.0	80.0	80.0
	More than one day	5	20.0	20.0	100.0
	Total	25	100.0	100.0	

Table 7: Co – morbid Conditions

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Viral fever	8	32.0	32.0	32.0
	UTI	2	8.0	8.0	40.0
	URTI	5	20.0	20.0	60.0
	Gastro esophageal	2	8.0	8.0	68.0
	Viral fever and URTI	7	28.0	28.0	96.0
	Viral fever and Gastro esophageal	1	4.0	4.0	100.0
	Total	25	100.0	100.0	

Table 8: Duration of Breast Feeding

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	less than one year	8	32.0	50.0	50.0
	1-2 years	5	20.0	31.3	81.3
	Up to 3 years	3	12.0	18.8	100.0
	Total	16	64.0	100.0	
Missing	System	9	36.0		
Total		25	100.0		

Table 9: Mothers Condition During Pregnancy

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Maternal diseases	1	4.0	4.0	4.0
	Pregnancy associated diseases	4	16.0	16.0	20.0
	coffee consumption	2	8.0	8.0	28.0
	Cesarean	6	24.0	24.0	52.0
	Back ground diseases	2	8.0	8.0	60.0
	coffee consumption and cesarean	4	16.0	16.0	76.0
	pregnancy associated diseases, coffee consumption and cesarean	2	8.0	8.0	84.0
	maternal diseases and coffee consumption	3	12.0	12.0	96.0
	maternal diseases and Cesarean	1	4.0	4.0	100.0
	Total	25	100.0	100.0	

Table.10: Natal and Anti natal Complications

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Premature birth	15	60.0	60.0	60.0
	Difficult labour	10	40.0	40.0	100.0
	Total	25	100.0	100.0	

Table11 : Family History

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	21	84.0	84.0	100.0
	No	4	16.0	16.0	16.0
	Total	25	100.0	100.0	

Table 12: History of Febrile Seizure

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	4	16.0	16.0	16.0
	No	21	84.0	84.0	100.0
Total		25	100.0	100.0	

Table13:Age of Occurrence of Febrile Seizure

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Up to 3 years	4	16.0	100.0	100.0
Missing	System	21	84.0		
Total		25	100.0		

Table.14: Correlation Between Gender and the Type of Seizure

		Gender	Type of seizure
Gender	Pearson Correlation	1	-.065
	Sig. (2-tailed)		.756
	N	25	25
Type of seizure	Pearson Correlation	-.065	1
	Sig. (2-tailed)	.756	
	N	25	25

Table.15: Correlation Between the Lab Data's and Febrile Seizure

	Type of seizure	Hemoglobin	platelet	WBC	Potassium	Calcium	sodium	magnesium	Blood sugar
Type of seizure	Pearson Correlation	.074	.205	-.220	-.419(*)	-.308	-.432(*)	-.398(*)	-.096
	Sig. (2-tailed)	.725	.327	.291	.037	.134	.031	.049	.647
	N	25	25	25	25	25	25	25	25

DISCUSSION

Febrile seizure are the most common single type of convulsive disorder mainly occurring in the children of age of 6 months to 6 years as a result of high grade body temperature without any underlying health problems. Febrile seizure is influenced by both genetic and environmental factors. Febrile seizure is one of major reason for pediatric hospitalization in the world wide. This study was aimed to identify the relationship between variable causative factors associated with the febrile seizure among the children referred to the Cosmopolitan hospital Pvt ltd.

In this study majority of children hospitalized due to febrile seizure are aged below 3 years (84%) and 16% of patients are aged above 3 years. Febrile seizure is more common in children of age group of 6 months to 6 years. This study results shows that main age of occurrence febrile seizure in children in the age of upto 3 months. In older children risk for febrile seizure is very rare.

The present study findings shows that male patients (76%) were more hospitalized due to febrile seizure when compared to the female patients. This is similar with the study

conducted by the Eskandarifar et al.² the ratio of male patient hospitalized due to febrile seizure were 57.5%.The study conducted by Abolfazl et al. also shows a statistically significant difference between both case and control group regarding the gender(P=.01).The main reason behind this is not clear².

The result of this study shows that the cross tabulation of age and frequency of seizure shows that children of age upto 3 years have 1 episode of convulsive event.

Febrile seizure mainly associated with the high grade of body temperature. The findings of present study shows the relationship of body temperature and occurrence of febrile seizure, that majority of children's (60%) admitted with febrile seizure have a body temperature of above 101.6F.Similar to this study ,Reyhanch et al. identified that duration of febrile seizure is associated with rise in body temperature.

In the present study, analysis on the type of seizure shows that majority of the patients have GTC seizure (28%) and this is followed by the typical seizure(16%).This result also shows the relationship between the type of seizure.

Present study findings 80% of patients have fever for one day and only 20% of the respondents have fever more than one day. The co-morbid conditions assessed in this study shows that majority of child patient having febrile seizure were suffered from the viral fever. The conditions like otitis media ,pneumonia, immunization associated febrile seizure ,UTI also provide a relationship for the occurrence of febrile seizure. The viral fever associated with URTI (28%) also show a significant relationship between the febrile seizure and viral fever Study findings shows that children's with febrile seizure do not have a day care attendance.

The study provides the relationship between the breast feeding duration and the occurrence of febrile seizure shows that majority of children (32%) fed only less than 1 year. Here 36% of the respondents remain neutral as they hesitate to express their opinion.

Mother's conditions during pregnancy is one of the major complication for febrile seizure. Among these risk factors ,majority of them have cesarean (24%) and this is followed by pregnancy associated diseases (16%)and coffee consumption (16%) and cesarean.

Antenatal and natal complications also show a relationship to the febrile seizure, Low birth weight is one of the major factor influence the occurrence febrile seizure(60%).

Most of the studies conducted in the identification of risk factors in risk factors shows a significant chances for the family history of febrile seizure .In our study 84% of child hospitalized due to febrile seizure has no family history of febrile seizure.

In this study most of the respondents do not have a history of febrile seizure(84%). The present study result ,analysis of correlation between the gender of the respondents and type of seizure shows no association between gender and type of seizure. Similar to this study, the study conducted by Eskandarifar et al² shows that simple seizure were common in boys and complex febrile seizure were common in girls. But there is no significant evidence for the relationship between gender and type of seizure

In this study ,result of analysis of correlation between type of seizure and hemoglobin , platelets, potassium, sodium, magnesium are positively correlated with the febrile seizure occurrence. The result shows that the increase in these lab values provide an increased chance for febrile seizure. Febrile seizure are the most common type of convulsive event in children².The exact cause of febrile seizure is unknown, however ,there are several causative factor considered as risk factors as outlined in this study associated with incidence of febrile seizure².

CONCLUSION

Basedon the results from the collected data, it was identified that the parameters such as age, breast feeding duration ,body temperature, co morbid conditions like viral fever, type of seizure, family history, low birth weight are the major causative factor which provide a significant relationship in the development febrile seizure.

ACKNOWLEDGEMENT

The authors thank to the parents of children with febrile seizure who were referred to the Pediatric Department of Cosmopolitan Hospital Pvt Ltd, Thiruvananthapuram ,Kerala (India) for their participation in this study.

REFERENCE

1. Mogens Vestergaard, OlgaBasso, Tine Brink Henriksen, John R ,Ostergaard and John Olsen –Risk factors for febrile convulsion.Epidemiology,13(3),2002,282-287.
2. Alizera Eskandarifor, Asadolah Fatolahpor, Gamileh Asadi, Ibrahim Gaderi-The Risk factors in Children with Simple and Complex Febrile Seizures: An Epidemiological Study. Int J Pediatr ,vol 5,N 6,Serial No.42,2017,5137-5144
3. Indar Kumar Sharawat, Jitender Singh, Lesa Dawman, Amitabh Singh. Evaluation of Risk factors associated with Febrile Seizure.J Clin Daign Res,10(5),2016,10-13.
4. RN Srivastava and SK Kabra-Pediatrics A Concise Text,195-196

5. Parisa Rahmani, Maryam Saidi and Reyhaneh Mohsenipour-Assessment of Causative Factor of Febrile Seizure Related to a group of Children in Iran. Biomedical Research,28(4),2017,1548-1552.

AJPTR is

- Peer-reviewed
- bimonthly
- Rapid publication

Submit your manuscript at: editor@ajptr.com

