Original Article

Association of Serum Calcium Level and Febrile Fits

Serum Calcium Level and Febrile Fits

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ABSTRACT

Objective: To study the Association of Serum Calcium level and febrile fits.
Study Design: Observational study
Place and Duration of Study: This study was conducted at the Department of Pediatrics, Khair Pur Mirs Medical College, Khair Pur Mirs during January 2019 to December 2020.
Materials and Methods: This observational study was done on fifty children (six months to five year old) detected with febrile fits as the cases and forty year matched febrile children as the control group. Serum calcium, levels were measured. Results were analyzed with SPSS (version 20) using Student t-test. The informed consent of parents in every case was taken before collecting the samples. The permission of Ethical Committee was taken before collection of data and get published in Medical Journal.
Results: The age of patients of febrile fit was 35±13.2 and in control age was 36±10.99 and p value was P=0.09. There were 22 (44%) male and 28 (56%) female children in control and 24 (48%) male and 26 (52%) female children in control and P value was P=0.7. There was 8.72±0.46 mg calcium in febrile fit patients and 9.15±0.58 mg in control children and P<0.001 which was significant difference
Conclusion: Deficiency of calcium was correlated significantly with febrile fits, while further investigations on trace elements are required.
Key Words: Calcium, Febrile convulsion, Children

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INTRODUCTION

Febrile fits is a highly common problem of neurology at childhood[1]. Approximately, two to five percent of children are found to undergo at least one fit during a febrile illness before they get five year old[2], accounting for thirty percent of all fit among children. Fit is associated with fever though there is no evidence of brain infection or a definite cause for it[1,2]. The mechanisms underlying febrile fit have multi factorial cause, complicated by the fact that the pathology of febrile fits is unknown in most cases.

Febrile fits represents the point between a low fit threshold and components of genetic. Several essential elements play important roles in reactions of redox, in connective tissue or cell membranes, in stabilization molecules of biology, and in control of biological processes by helping the binding of molecules to receptor sites on cell membranes[3]. While disturbance in serum electrolytes is considered as a pathology theory of febrile fits, it has not been detected confirmed as yet. Low levels of some elements such as iron and sodium (Na) in the blood play roles in repeated occurrence of febrile fits[4]. We aimed to investigate some trace elements among children admitted with febrile compared with those of febrile without fit attacks.

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MATERIALS AND METHODS

This study was conducted at the Department of Pediatrics, Khair Pur Mirs Medical College, Khair Pur Mirs during January 2019 to December 2020. This observational study was done on fifty children (six months to five year old) detected with febrile fits as the cases and forty year matched febrile children as the control group. Serum calcium, levels were measured. Results were analyzed with SPSS (version 20) using Student t-test. The informed consent of parents in every case was taken before collecting the samples. The permission of Ethical Committee was taken before collection of data and get published in Medical Journal.

RESULTS

The age of patients of febrile fit was 35±13.2 and in control age was 36±10.99 and p value was P=0.09.

There were 22 (44%) male and 28 (56%) female children in control and 24 (48%) male and 26 (52%) female children in control and P value was P=0.7 as shown in table 1.

Table No. 1: Comparison between Cases and Controls regarding Age and Gender

Group	Cases (n=50)	Controls (n=50)	P-value
Variable			
Age (months)	35 ± 13.2	36 ± 10.99	P=0.09
Sex			
Male	22 (44%)	24 (48%)	P=0.7
Female	28(56%)	26 (52%)	

Table No. 2: Comparison between Cases and Controls regarding calcium

Group	Cases (n=50)	Controls (n=50)	Independent t-test
Variable			
Ca	8.72 ± 0.46	9.15 ± 0.58	P<0.001

There was 8.72±0.46 mg calcium in febrile fit patients and 9.15±0.58 mg in control children and P<0.001 which was significant difference as shown in table 2.

DISCUSSION

Febrile fits is the most common cause of seizures among children. It has been known since very old time that fits mostly accompany fever in young children. The exact pathogenesis is unknown but involves factors such as genetic predisposition and alterations. In the present work, we found the levels of trace elements and major element concentrations among children with febrile fits. Our results showed that calcium levels were affected in children with febrile fits. The changes in calcium in febrile fits explained the response of the metabolism. (5) It exerts a voltage dependent blockage of Nmethyl-Daspartate (NMDA) receptor channel (6,7, 8-10 (11, 12), while Sadeghzadeh et al. did not found any clear abnormalityin serum, Ca levels in children with febrile fits although his study did not have a control group (13) (14). In the current study, a significantly low Ca concentration was found in patients with febrile fits as compared with the controls. Ca concentrations in the febrile fits group were lower than in the control group (3). results(6) but concide with Heydarian et al.'s (15). While this was a case–control study with a sound design, it suffered from some deficiency such as we did not perform the detection of Cerebro Spinal Fluid level of the trace elements.

In conclusion, Ca, levels were significantly lower in children with simple febrile fits in comparison with febrile children without fit. It can stress the hypothesis that there is a relation between some serum elements' levels and febrile fits in children.

CONCLUSION

Deficiency of calcium was correlated significantly with febrile fits, while further investigations on trace elements are required.

Author's Contribution:

Concept & Design of Study:	Ubedullah Bahalkani
Drafting:	Sheeraz Ahmed, Bakhtiar Ahmed
Data Analysis:	Mumtaz Ali Bharo, Kamran Ali
Revisiting Critically:	Ubedullah Bahalkani, Sheeraz Ahmed
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Conflict of Interest: The study has no conflict of interest to declare by any author.

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