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Pattern of Febrile Convulsion in Hospitalized Children

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Summary

Olowu AO and Olanrewaju DM. Pattern of Febrile convulsion in Hospitalized Children. Nigerian Journal of Paediatrics 1992;**19**:1. The results of a retrospective study of 171 patients with febrile convulsion seen in the Children's Emergency Ward of the Ogun State University Teaching Hospital, Sagamu, between June, 1986 and June 1990, are presented. The mean age of the patients was 3.1 years and the male to female ratio was 1.28:1. Thirty-eight patients (22.2 percent) had a past history of febrile convulsion, while a positive family history of same was obtained in 21 patients (12.3 percent). The commonnest underlying aetiologic factors were malaria in 129 (75.4 percent) and upper respiratory tract infection in 21 patients (12.3 percent). Traditional concoctions in various forms were administered to 90 patients (52.6 percent). The morbidity and mortality in this study were found to be directly related to the administration of traditional concoctions to the children before hospitalization.

Introduction

THE term febrile convulsion is applied to convulsion preceded, or accompanied by fever in a child, aged between six months and six years, the cause of the fever being unrelated to any central nervous system defect or infection. It is a common cause of morbidity among Nigerian children [1] and is responsible for between 15 and 18 percent of paediatric emergencies in Nigeria. [2 3] Earlier studies suggested that at least 50 percent of patients with febrile convulsion would have received native drug treatment before presentation in hospital.[2] Since these earlier reports, a lot of health education has been embarked upon under the primary health care scheme of the Federal Government of Nigeria. Specifically, mothers have been educated on the potential dangers of using native concoctions for febrile convulsion and they have also been educated on measures to reduce fever pending definitive medical treatment. The aim of the present study was to review the current pattern of febrile convulsion among children hospitalized at the Ogun State University Teaching Hospital and also to assess the role of traditional concoctions administration on the morbidity and mortality of the disease.

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Patients and Methods

The subjects consisted of patients admitted into the Children's Emergency Unit of the Ogun State University Teaching Hospital, Sagamu, between June, 1986 and June, 1990, with a diagnosis of febrile convulsion. Only those that fulfilled the following diagnostic criteria were included: aged between six months and six years; convulsion associated with fever; absence of congenital or acquired central nervous system disorders such as hydrocephalus or infections.

Medical records of these patients were reviewed and relevant data obtained in each case included the age, sex, duration of fever before admission, history of native drug administration, underlying cause of febrile convulsion, duration of admission and the outcome of the illness. Patients were classified into socio-economic groups based on the method suggested by Oyedeji.[4] The range and means of the variables were calculated (where applicable), while the chi-squared and t-tests were used to determine the significance of observed differences, where indicated.

Results

A total of 171 cases fulfilled the criteria for inclusion in the study. The total number of paediatric emergencies during the study period was 1,425; thus, the prevalence rate of febrile convulsion in our study was 12 percent of all paediatric emergencies. There were 96 males and 75 females with a male to female ratio of 1.28 to 1. Their ages ranged between six months and six years with a mean of 3.1 (±1.50) years. Table I shows the age and sex distribution of the patients. It can be seen that 111 patients (64.9 percent) were below the age of 4 years. Seventy percent of the patients belonged to the lower socio-economic classes IV and V.[4] There was a positive history of previous episodes of febrile convulsion in 38 patients (22.2 percent), while a positive family history was obtained in 21 patients (12.3 percent). Convulsion was generalised in 114 cases, tonic-clonic in 109 patients and tonic in five others. The pattern of convulsion was not documented in 57 patients. The duration of convulsion ranged between 10 seconds to two hours, with a mean of 10.2 (±16.60) minutes. The cerebrospinal fluid (c.s.f.) examination was essentially normal in all cases. The estimated random blood sugar (RBS) levels ranged between 6 and 174 mmol/dl (mean of 96.5 ± 40.5 mmol/dl). Six patients had hypoglycaemia, defined as RBS level of seven mmol/dl and below; all of these had received traditional concoctions before hospitalization.

Table I

Age and sex distribution of 171 patients with febrile seizure

Age Group (years)	Sex		Total No. of cases	Percent of total
	M	F		
0.5-1.99	23	17	40	23.4
2 - 3.99	38	33	71	41.5
4 - 5.99	35	25	60	35.1
Total	96	75	171	100.0

The underlying causes of febrile convulsion are presented in Table II. Infection with *Plasmodium falciparum* accounted for 129 (75.4 percent) of the cases. Upper respiratory tract infection was the second common causative factor, accounting for 21 (12.3 percent) of the cases.

Urinary tract infection was caused by *Eschericia coli* (two cases) and *Klebsiella* specie (one case). Blood culture in the two cases of suspected typhoid fever yielded a non-lactose fermenter *Salmonella specie.* The diagnosis in others were mainly clinical.

Table II

Aetiologic factors of febrile convulsion in 171 patients

Factor	No of Patients	Percent of Total
Malaria	129	75.4
Upper respiratory tract infection	21	12.3
Otitis media	4	2.4
Bronchopneumonia	4	2.4
Tonsillitis	2	1.2
Typhoid	2	1.2
Osteomyelitis	2	1.2
Urinary tract infection	3	1.8
Measles	1	0.6
Unidentified	3	1.8
Total	171	100.0

The temperature of the patients on admission ranged between 36.4°c and 40.5°c, with a mean of 38.2 (±0.9)°c. The duration of fever before admission ranged between three hours and seven days, with a mean duration of two (±1.4) days. Using as febrile, axillary temperature of 37.7°c,[5] 128 patients (75 percent) had fever on admission.

A positive history of ingestion of traditional concoctions was obtained in 90 (52.6 percent) patients. Of this number, 66 were given unspecified concoctions, 13 were given cow's urine concoctions and three received alcohol. Concoctions were applied topically on four patients (Table III). Six (7.1 percent) of the 84 patients who were given the concoctions by mouth had hypoglycemia.

TABLE III

Traditional concoctions administered before presentation

Concoction	No. of Patients	Percent of Total
Unspecified	61	64.90
Cow's urine concoction	13	13.80
Salt	12	12.78
Alcohol	3	3.20
Black soap*	1	1.06
Incense	1	1.06
Total	94	100.00

*Applied topically

The duration of hospitalization ranged between four hours and twelve days, with a mean duration of three (±2.08) days. The mean duration was 3.4 (±2.14) days for those who received traditional concoction, while it was 2.8 (±1.97) days for those who did not; thus, the observed differences between the two groups were not significant (P>0.05).

There were three deaths (0.02 percent), while 161 patients were discharged without any complications. Of the seven patients with complications, four had iatrogenic burns at home, two had cortical blindness and one patient was discharged with an unsteady gait. All the deaths occurred among the 13 patients that were given cow's urine concoction.

Discussion

This study has shown that febrile convulsion is still a common paediatric emergency problem

in Nigeria; it accounted for 12 percent of cases seen at the Children's Emergency ward during a four-year period. This is attributable to the high prevalence rate of malaria and other acute infectious conditions in childhood. The prevalence rate of 12 percent obtained in our study is higher than reports from other parts of the world,[6 7] but similar to other reports from Nigeria.[2 3] The high prevalence of febrile convulsion in children below the age of 5 years is due to the fact that this is the age group most vulnerable to acute infectious conditions.

Malaria infection was the commonest causative factor of febrile convulsion in the present series. By contrast, among Caucasians, upper respiratory tract infection is reported as the commonest cause of febrile convulsion in children.[8] This difference is to be expected as malaria is exclusively a disease of the tropics and subtropics.

The positive family history of febrile convulsions obtained in 12 percent of our patients is lower than the figures earlier reported by Scott Emuakpor and Longe from Benin City.[9] The lower percentage in our study may be due to the fact that febrile convulsion is regarded as a form of epilepsy in our local community and therefore parents are generally reluctant to disclose a positive history of such an occurrence. Considerable social stigma is attached to epilepsy in our community and parents are therefore ashamed to admit that such a disease ever occures in the family.

Our observation that 52 percent of patients had received traditional concoctions before presentation, is similar to earlier report [2] and is an indication that health education has not had the desired effect in halting this dangerous practice.

The three deaths and the two patients with cortical blindness had all received cow's urine concoction which is known to cause severe hypoglycaemia. Apart from this metabolic effects, administration of traditional concoction to a convulsing child also significantly increased the risk of aspiration. The mortality reported in the present study appears very low when all the patients are considered together, but the three deaths are equivalent to 23 percent of those who received cow's urine concoction. The mortality rate of 0.02 percent obtained in this study is much lower than rates reported by others [2 10] and may be due to the fact that majority of our patients did not present with serious complications.

In order to reduce morbidity and mortality from febrile convulsion, continuing emphasis needs to be placed on health education of mothers. The hazards of cow's urine concoction need to be brought to the attention of parents through the various mass media organisations. More importantly, greater emphasis should be laid on the control of malaria. The recommendation of the World Health Organisation on malaria control [11] can be implemented within the context of a well-organised primary health care scheme incorporating intersectoral co-operation between the health services, the ministry of works, ministry of information and the general public. Perhaps, it will be possible to complement this with immunological control by vaccination in the not-too-distant future. Chemoprophylaxis with anticonvulsants such as phenobarbitone or sodium valproate [12] has been shown to significantly reduce the chances of recurrence of febrile convulsion and this therepy should be instituted for patients who have had more than two episodes of febrile convulsions.

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