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Research Article

ETIOLOGICAL PROFILE OF CHILDREN ADMITTED WITH FEVER WITHOUT FOCUS FOR LESS THAN 7 DAYS DURATION AT TERTIARY CARE CENTER

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ABSTRACT

Objective: The objective of the study was to know about the etiology of acute undifferentiated febrile illness (AUFI) or fever without focus in children admitted at tertiary care hospital.

Methods: A study was conducted at medical college, Jhalawar, for a period of 3 months. Pediatric patients presenting with fever for less than or equal to 7 days duration without focus, who required hospitalization were included in this study.

Results: A total of 200 children enrolled in study. Male-to-female ratio was 1.9:1. Mean age of children was 7.21±4.2 years. About 142 (71%) patients presented after 3 days of fever. Average duration of fever before admission was 4.62±1.78 days. The most common cause of fever of short duration (less than 7 days) was dengue fever 74 (37%) followed by malaria 58 (29%) and typhoid fever 36 (18%). About 26 (13%) patients had mixed infection. Out of 200 patients, 70 (35%) patients had splenomegaly, 66 (33%) had hepatomegaly, and 26 (13%) patients had both hepatosplenomegaly.

Conclusion: The common etiology of AUFI with short duration in children was dengue, malaria, and typhoid. Vector control measures, drinking water supply, and sanitation should be improved to prevent vector-borne and water-borne diseases.

Keywords: Fever with short duration, Children, Acute undifferentiated fever, Without focus.

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INTRODUCTION

Fever for short duration without focus (acute undifferentiated febrile illness [AUFI]) is a very common indication of hospitalization in pediatric age group. Although these patients are presents throughout the year, cases of seasonal fever increased during monsoon and post-monsoon season [1,2].

Because of non-specific clinical presentation and the limited clinical microbiology services available in many low resource's areas, very few patients receive an accurate and specific diagnosis and various causes of fever remains unknown at the community level as well as in tertiary care setting. The non-specificity of the symptoms and signs apart from posing a diagnostic and therapeutic challenge to the treating pediatrician also leads to irrational use of antibiotics and antimalarials. Vector-borne diseases such as malaria, dengue, leptospirosis, rickettsia, and urinary tract infections were frequently identified as causes of acute undifferentiated fever [3].

In resource-limited settings, fever may be treated empirically or self-treated due to lack of access to diagnostic tests. Thus, knowledge of local prevalence of infections is critical as most of the diseases are treatable if they were diagnosed earlier.

Hence, we planned this study to know about the etiology of infectious disease and to augment the early and prompt diagnosis of fever without focus at our tertiary care center.

MATERIALS AND METHODS

The present study was done at Zanana Hospital and Medical College, Jhalawar, for a period of 3 months in the Department of Pediatrics.

Inclusion criteria

Patients presenting with fever for less than or equal to 7 days duration with or without myalgia, headache, nausea, vomiting, joint pains, body pain, rash, petechiae, and eschar who required hospitalization.

Exclusion criteria

Patients with fever for less than 7 days and with localizing signs such as respiratory, urinary illness, and CNS infection were excluded from the study.

Study type

This was an observational study.

The study was approved by the Institutional Ethical Committee and informed consent from parents/guardians was taken for study.

Methods

On admission, each patient's data were collected and recorded in pretested pro forma. Informed consent was taken for study. The detailed history was obtained and clinical examination performed to rule out any localizing signs. Patients were clinically evaluated for rash, petechiae, hemorrhage, eschar, and for any localizing sign. Patient's blood samples were collected for different test available in hospital. Complete blood count, urine examination, rapid diagnostic test for malaria, ELISA for dengue NSI antigen, IgM ELISA for dengue, chikungunya, IgM ELISA for scrub typhus, and slide agglutination test for enteric fever were done for every case. Blood culture, urine culture, peripheral smear, and CSF were done in selected cases only.

RESULTS

A total of 200 children enrolled in study and evaluated. Out of these, 132 (66 %) were male and 68 (34 %) were female (ratio M: F=1.9:1).

About 130 (65%) of children were more than 5 years of age and mean age of children was 7.21±4.2 years. Out of 200 patients, 142 (71%) presented after 3 days of fever because in initial phase of illness, most of patients does not seek medical advice and when there is no response then only came to health facility. Average duration of fever before admission was 4.62± 1.78 days [Table 1].

Etiological pattern of fever in the present study suggests that the most common cause of AUFI of short duration (less than 7 days) was dengue fever 74 (37%) followed by malaria 58 (29%) and enteric fever 36 (18%).

About 26 (13%) patients had mixed infection and cause was not sought in 26 (13%) cases. Among 26 cases of mixed infection, malaria and dengue was present in 10 (38.4%) patients. Typhoid and malaria were present in 8 (31%) patients. Out of 200 patients, 50% were having constitutional symptoms.

About 56 (28%) patients had pallor (mild to severe). Out of 200 patients, 70 (35%) patients had splenomegaly, 66 (33%) had hepatomegaly, and 26 (13%) patients had both hepatosplenomegaly.

Out of 58 patients those had malaria, splenomegaly was present in 42 (72%) cases and mean hemoglobin level among malarial patients was 8.21±2.40 g/dl.

Among dengue patients, 34 (46%) had leukopenia (<4000/mm^3) and mean leukocyte count was 5236±2833/mm^3.

DISCUSSION

The present study was carried out at tertiary care center of Rajasthan at Jhalawar Medical College. Many Studies are available for adult patients regarding acute undifferentiated febrile illness but very few studies about acute undifferentiated febrile illness are there for pediatric patient.

Table 1: Baseline characteristic and etiological profile of patients

Parameter	n (%)
Sex	
Male	132 (66)
Female	68 (34)
Age	
1 month–2 years	34 (17)
2–5 years	36(18)
>5 years	130 (65)
Duration of fever	
1–3 days	58 (29)
3–7 days	142 (71)
Disease pattern	
Dengue	74 (37)
Malaria	58 (29)
Enteric	36 (18)
Mixed infection	26 (13)
Undiagnosed	26 (13)
Urinary tract infection	4 (2)
Mixed infection (n=26)	
Malaria and dengue	10
Malaria and typhoid	8
Dengue and Urinary tract infection	6
Typhoid and Urinary tract infection	2
Physical examination	
Pallor	56 (28%)
Splenomegaly	70 (35%)
Hepatomegaly	66 (33%)
Hepatosplenomegally	26 (13%)

In our study, male patients were more than female patients (M: F=1.9:1). This might be due to that male child given priority over female child in rural India. Parents seek medical advice for female child less commonly as compare to male child.

Children older than 5 years of age were most commonly affected as at this age children starts going to school. Outdoor activities were also increased after this age so make them more prone for vector-borne diseases.

In our study, the most common etiology of acute undifferentiated fever was dengue (37%) followed by malaria (29%) and enteric fever (18%). Present study was conducted during monsoon season (July to September). Monsoon season is convenient time for mosquito breeding and drinking water also gets contaminated easily by rainy water so increases the vector borne and water borne disease. Seasonal upsurge of febrile illnesses was also documented in other studies [4-6].

Dengue fever was the most common etiology of fever for short duration and similar finding was observed in the previous studies [7-9]. In our study out of 74 dengue patients, 34 (46%) had leukopenia (<4000/mm^3) with mean leukocyte count of 5236±2833/mm^3. Diallo *et al*. in their study observed that leukopenia (73.5%), neutropenia (56.1%), and severe thrombocytopenia (57.1%) were the predominant hematological disturbances in dengue patients [10]. Badreddine *et al*. reported that mean nadir WBC count was 4600/mm^3 in dengue pediatrics patients [11].

In our study, malaria was diagnosed in 58 cases, out of which 72% of patients had splenomegaly and mean hemoglobin level among malaria patients was 8.21±2.40 g/dl. Mangal *et al*. in their study found anemia in 58% of cases, hepatomegaly in 32% of cases, splenomegaly in 66% of cases, and hepatosplenomegaly in 27% of cases. Accelerated red blood cells removal by the spleen, obligatory red blood cells destruction during parasite schizogony, and ineffective erythropoiesis are important cause of anemia in malaria [12].

In the present study, there were 26 (13%) patients with undiagnosed febrile illness, their clinical outcomes were studied. All these patients were discharged after they were afebrile for a period of 48 h with improvement in the general condition. In our study, there was no mortality recorded.

The etiology of undiagnosed infections ranges from 8% to 80% as reported by Susilawati *et al*. [1]. Mixed infections with more than 1 etiological agent sometimes may lead to delay in diagnosis and management due to overlapping of symptoms [13].

CONCLUSION

The common etiology of AUFI or fever for short duration in children was dengue, malaria, and enteric fever. About 13% of patients were having mixed infection so treating pediatrician should be aware of mixed infections as it may lead to fatal outcomes. Vector control measures, drinking water supply, and sanitation should be improved to prevent vector-borne and water-borne diseases. As some of the cases remain undiagnosed, so further research is needed in designing a diagnostic algorithm and management of patients with AUFI.

Limitations

As very few studies are available on pediatric patients and our present study was hospital-based and sample size was also less so this highlights the need for further research in the incidence prevalence and etiology of pediatric AUFI cases.

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AUTHORS' CONTRIBUTIONS

Rajendra Prasad Nagar was involved in all part of research specially concept, design, content, and manuscript preparation. Teena Nagar, Madhurima Verma, and Rakesh Kumar Sharma did data acquisition, data analysis, manuscript editing, and literature search.

CONFLICTS OF INTEREST

None.

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