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ORIGINAL ARTICLE

Etiology of Acute Undifferentiated Fever in Patients Attending the Emergency Department of a Tertiary Care Hospital

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ABSTRACT

Background: The presence of a fever is one of the most often reported symptoms to medical professionals working in emergency department. It may be linked to a variety of clinical diseases, ranging from simple viral infections that go away on their own to sepsis.

Objective: To assess the etiology of acute undifferentiated fever in patients attending the emergency department

Methodology: This retrospective study was carried out at the medicine department, Qazi Hussain Ahmad Medical Complex, Nowshera for duration of one year from 20-July 2020 to 30-July 2021. All the enrolled patients were diagnosed for different diseases like malaria, urinary tract infection, dengue fever, enteric fever and pneumonia. All the data analysis was done by using IBM SPSS version 24.

Results: In this study, the male patients were 108 (60%) while female patients were 72 (40%). Out of 108 diagnosed patients, 48 (44.44%) patients were diagnosed with malaria (79.17% P.vivax and 20.87% P.falciparum) followed by dengue fever in 30 (27.78%) patients, enteric fever in 13 (12.04%) patients (92.31% S.typhi, 7.69% S.paratyphi), urinary tract infection in 11 (10.19%) patients and pneumonia was diagnosed in 6 (5.56%) patients.

Conclusion: Our study concludes that the predominant etiology of undifferentiated fever was malaria followed by dengue fever. In about 40% of the cases the laboratory tests were inconclusive.

Keywords: Acute undifferentiated fever; Etiology; Emergency

INTRODUCTION

One of the main causes of disease and mortality in poor nations such as Pakistan is infectious diseases [1]. Data from the World Health Organization indicate that Pakistan's healthcare system is experiencing difficulties. In Pakistan, tuberculosis is the fifth most prevalent problem in the world. In Pakistan, Malaria is endemic problem. Infections account for about 25 to 30% revisits to emergency department [2]. The presence of a fever is one of the most often reported symptoms to medical professionals working in emergency department. It may be linked to a variety of clinical diseases, ranging from viral illnesses that go away on their own to sepsis, which causes both mortality and morbidity and necessitates admittance to an intensive care unit or an extended hospital stay [3]. Particularly in South Asian nations, acute undifferentiated fever is a typical reason for consultations to healthcare professionals. According to the first history and physical assessment, it is described as fever without an emphasis on infection. It is a serious illness with difficult diagnosis and treatment options. Common infectious diseases that induce acute, unexplained fever include typhoid, malaria and dengue [4]. These diseases place a heavy financial burden on society and often result in the irrational prescriptions of broad-spectrum antibiotics [5]. Acute undifferentiated fever may have a variety of probable causes, such as infections, disorders of connective tissue, cancers, and a variety of other illnesses that occasionally go untreated despite extensive laboratory testing. Whether an illness is probable enough to need the use of an antibiotic is a crucial clinical issue. The likelihood of an infectious cause of fever before the test may be influenced by a thorough history and physical examination, prior medical history, current medicines, and recent antibiotic usage. To further investigate the cause of the fever, however, more laboratory tests or radiographic imaging may be required. Thorough knowledge of the local epidemiology is necessary for an accurate risk classification of febrile patients, and risk variables linked to unfavorable clinical consequences must be found. In spite of the fact that the underlying diseases that are the primary sources of a fever might vary quite a bit from case to case, it is necessary to tackle this problem in a methodical manner. Fever is often seen as a sufficient justification for the use of antibiotics in emergency department settings, which has over time developed antibiotic resistance [6]. In many underdeveloped nations, febrile patients now often self-medicate. Despite thorough tests, undifferentiated fever is often misdiagnosed. Although many of them clear on their own, others never get a diagnosis [7]. Fever is one of the most frequent ailments for which people in Pakistan seek medical assistance, but little is known about the frequency with which certain infections occur in emergency department settings. When comparison is made to other infections, the incidence of certain infections, such as pneumonia, dengue fever, enteric fever, and malaria, seems to be greater. For physicians, it will be crucial to have reliable epidemiologic data since it will allow resources to be focused toward important areas. Based on literature no data is available in our setting about the acute undifferentiated fever patients. Therefore this study was carried out to determine the acute undifferentiated fever etiology of in patients attending the emergency department.

MATERIALS AND METHODS

This retrospective study was carried out at the medicine department, Qazi Hussain Ahmad Medical Complex, Nowshera. The duration of study was one years from 20-July 2020 to 30-July 2021. The study approval was taken from the research and ethical committee of the hospital. All the patients of both the gender having age ≥18 years, presented with axillary fever of ≥ 38°C, with fever duration of ≤ 15 days having no apparent focus of infection at the emergency department were included in our study. All the patients having localized infection sign or patients on antibiotic treatment, patients not willing to participate and patients with cancer and problems of immune system were not included. By using pre-designed Performa, all the clinical and demographic information were recorded. Treatment decisions were solely left up to the treating physician's choice, including patient assessment, diagnostic testing and treatment. All the enrolled patients were diagnosed for different diseases like malaria, urinary tract infection, dengue fever, enteric fever and pneumonia. The diagnostic criteria for all these problems are given in table 1. All the data analysis was done by using IBM SPSS version 24. Means (Standard deviations) were computed for variables like age and fever duration whereas frequencies (percentages) were calculated for gender and different disease observed in our study.

Table 1: Diagnostic criteria for different diseases

Serial No	Disease	Diagnostic criteria
1	Malaria	Positive blood smear for plasmodium or positive test on ICT
2	UTI	Positive urine culture (≥1000cfu/ml of urine)
3	Dengue fever	IgM antibody positive
4	Enteric fever	Positive blood culture for S.typhi or S.paratyphi
5	Pneumonia	When chest radiograph shows airspace shadowing

RESULTS

In this study, totally 180 patients presenting to the emergency department were enrolled. The male patients were 108 (60%) while female patients were 72 (40%). (Figure 1) There were 99 (55%) patients in the 18-34 years age group while 81 (48%) patients were in the ≥35 year's age group. The mean (±standard deviation) age was34.99 (±12.81) years. (Figure 2) Emergency Severity Index was used for triaging of the patients. Based on the triaging of the patients, the number of patients in P1 (immediate), P2 (emergency), P3 (urgent), P4 (semi-urgent) and P5 (non-urgent) were 00 (00%), 160 (88.89%), 18 (10%), 2 (1.11%) and 00 (00%) respectively. (Figure 3) The minimum fever duration was one day while the maximum fever duration was 15 days.

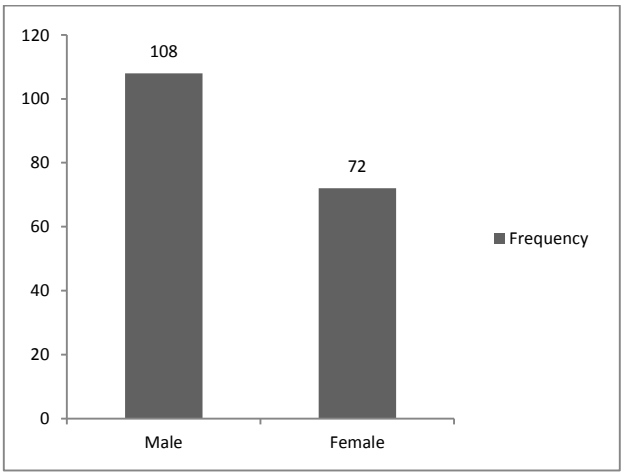

Figure 1: Distribution of patients based on gender

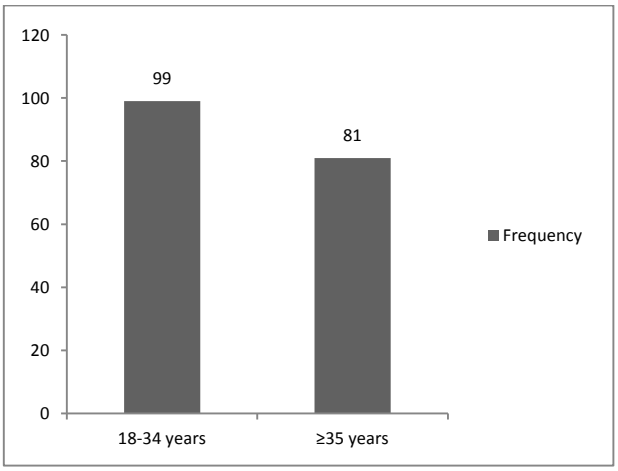

Figure 2: Distribution of patients based on age

The numbers of patients observed in the range of ≤5 days fever duration were 70% while 30% patients were observed in the fever duration range of 6-15 days. In the current study 108 (60%) patients with undifferentiated etiology of fever were diagnosed while for the remaining 72 (40%) patients, the laboratory diagnosis was inconclusive and based on sign and symptoms they were suspected as viral fever. Out of 108 patients, 48 (44.44%) patients were diagnosed with malaria. Out of 48 cases diagnosed with malaria, 38 (79.17%) cases were positive for plasmodium vivax while 10 (20.87%) cases were positive for plasmodium falciparum. Dengue fever was diagnosed in 30 (27.78%) patients followed by enteric fever in 13 (12.04%) patients (92.31% S.typhi, 7.69% S.paratyphi), urinary tract infection in 11 (10.19%) patients and pneumonia was diagnosed in 6 (5.56%) patients. (Figure 4)

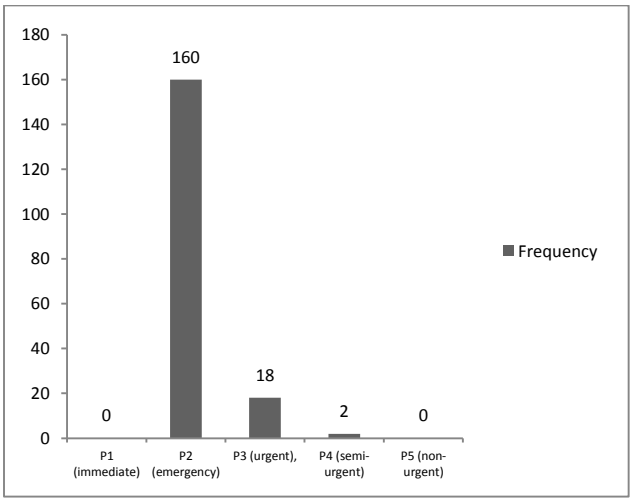

Figure 3: Distribution of patients based on triaging

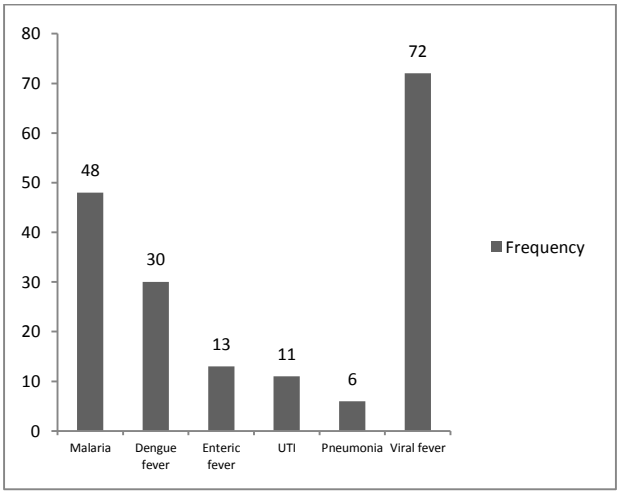

Figure 4: Distribution of patients based on disease diagnosis

DISCUSSION

While acute undifferentiated fever is often seen in tropical developing countries, its precise cause is frequently unclear, rendering it challenging to make a correct diagnosis, provide a successful treatment, and design focused public health initiatives. Health care practitioners in these underdeveloped regions have a significant deal of trouble recognizing a particular infection due to the lack of focused signs or symptoms and the lack of diagnostic procedures accessible, with the risk of higher morbidity and death [8-13]. Prior research has identified leptospirosis, dengue fever, malaria, rickettsioses, enteric fever, urinary tract infection and pneumonia [14-17]. This study's objective was to evaluate the numerous causes and clinical manifestations of acute undifferentiated fever in the Nowshera, Khyber Pakhtunkhwa area

of Pakistan in order to aid local medical practitioners in the detection, treatment, and prevention of these illnesses.

In the current study 60% patients with undifferentiated etiology of fever were diagnosed while for the remaining 40% patients, the laboratory diagnosis was inconclusive and based on sign and symptoms they were suspected as viral fever. These findings are almost same with the previous study carried out in Pakistan who diagnosed 58% of the patients presenting with the acute undifferentiated fever [4]. This might be due to various diagnostic tests not available in the hospital diagnostic laboratory for viral diseases. Another study reported that only 40% cases presenting undifferentiated etiology of fever were diagnosed while for the others, the laboratory tests were inconclusive [18].

In this study, Emergency Severity Index was used for triaging of the patients. Based on the triaging of the patients, the number of patients in P1 (immediate), P2 (emergency), P3 (urgent), P4 (semi-urgent) and P5 (non-urgent) were 00%, 88.89%, 10%, 1.11% and 00% respectively. In accordance with these findings another study did not observed any patients in P1 and P5 presenting with undifferentiated etiology of fever [4].

In our study, out of 108 patients, 48 (44.44%) patients were diagnoses with malaria. Out of 48 cases diagnosed with malaria, 38 (79.17%) cases were positive for plasmodium vivax while 10 (20.87%) cases were positive for plasmodium falciparum. In our study malaria was diagnosed predominantly similar with other studies [4, 19, 20].

P. vivax is the pre-dominant type of plasmodium in south-east Asia (53%) and Amricas (75%) according to WHO [21]. Despite significant efforts, malaria remains a major threat to public health in Pakistan. In Pakistan, there are two main Plasmodium species: P. falciparum and P. vivax, with P. vivax dominant in most areas [22, 23].

In our study males were dominant as compared to females. This might be due to more involvement of males in outdoor activities as compared to female due to regional culture. Other studies also reported comparable results [4, 24].

In this research, dengue fever was diagnosed in 27.78% patients followed by enteric fever in 12.04% patients (92.31% S.typhi, 7.69% S.paratyphi), urinary tract infection in 10.19% patients and pneumonia was diagnosed in 5.56% patients. These findings were comparable with the previous studies [4 13, 25]. More research is required to determine the incidence of various causes of undifferentiated acute fever in tropical countries such as Pakistan. These studies should include both the adult and pediatric populations and should be conducted in both hospital and community settings.

CONCLUSION

Our study concludes that the predominant etiology of undifferentiated fever was malaria followed by dengue fever. In about 40% of the cases the laboratory tests were inconclusive. All the government hospital should provide cost-economic facilities for diagnosing viral diseases in patients presenting with the acute undifferentiated fever etiology to reduce associated morbidity and mortality.

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