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Original Research Article

Etiology and clinical spectrum of acute undifferentiated fever illness in patients in a tertiary care hospital Sheri Kashmir institute of medical science Soura, Jammu and Kashmir

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ABSTRACT

Background: Current study aimed at s to delineate the etiology and clinical parameters associated with AUFI presenting to emergency department in a tertiary care hospital.
Methods: This was a prospective hospital based study carried out at emergency medicine, SKIMS hospital, Soura Kashmir, India July 2017 to august 2018. Patients with acute undifferentiated fever were enrolled. Descriptive statistics were calculated in terms of mean±SD for continuous variables like age of the patients and duration of fever, Frequency and percentage were used to analyse categorical variables such as causes of fever and gender, while as descriptive analysis was calculated in terms of mean±SD for continuous variables like age of the patients and duration of fever.
Results: Total numbers of patients included were 174, among these 112 (64.3%) were males and 62 (35.6%) were females. Most patients were diagnosed enteric fever (N=59, 33.9%) followed by UTI (N=25, 14.3%) dengue (N=12, 6.8%) and malaria (N=8, 4.5%) while rest of cases were associated with other viral illnesses (N=70, 40.5%) based on clinical basis and inconclusive laboratory results.
Conclusions: Enteric fever was found to be the most common cause of acute undifferentiated fever followed by dengue and other viral illnesses, although causes and clinic spectrum of AUFI is varied.

Keywords: Undifferentiated fever, Enteric fever, Dengue, Viral fevers

INTRODUCTION

Acute undifferentiated fever is defined as fever that does not extend beyond 2 weeks with lack of localised or organ specific clinical characteristics.[1] In other words AUFI is fever of acute onset of 2 weeks duration with non specific symptoms and signs.[2] To reduce morbidity and mortality especially in developing countries like India, effective management regarding causative factor Is important s regarding AUFI.[3] AUFI is differentiated from pyrexia of unknown origin (PUO), as PUO is fever of at least 3 weeks duration and no cause is ascertained even after investigations.[4] Acute undifferentiated fever is one of the common cause of visits to health care providers in India mostly during month of July to September.[5] Self-medication has become very common among febrile subjects in many developing countries. Undifferentiated fever (AUDI) remains undiagnosed in various cases despite extensive investigations, while some cases resolve spontaneously and some remain undiagnosed.[6] Acute undifferentiated febrile illness (AUFI) constitutes majority of inpatient admission and outpatient visit in

India, common causes of AUFI include enteric fever, dengue, malaria, leptospirosis, rickettsiosis, hantavirus and Japanese encephalitis.[7,8] AUFI leads to substantial mortality and morbidity among children and adults worldwide.[9,10] Fever may be self-treated or on empirical basis in resource limited setting as a result of limited access to diagnostic tests.[11] Therefore, the aim of this study was to describe the characteristics and aetiology of undifferentiated fever among patients in a tertiary care hospital.

METHODS

Our study was prospective hospital based study carried out at SKIMS hospital, Soura from July 2017 to August 2018 in 174 patients. Informed consent was taken from all participants or from their parents included in our study.

Inclusion criteria

Inclusion criteria for current study were; patients in age group ≥10 to 32 years and willing patients.

Exclusion criteria

Exclusion criteria for current study were; UN willing patients, patients presenting with signs of localized infection or patients on antibiotics for >24 hours, patients with auto immune disorders or immunosuppresents, patients with malignancies and who had malignancies or are on immunosuppressant were also excluded.

Procedure

All cases of Acute undifferentiated fever in our study were examined by obtaining detailed history and clinical examination followed by laboratory investigations. Causes of fever such as typhoid, urinary tract infections, dengue fever and other viral illnesses were expressed as frequency and percentage, while as mean±SD were used for duration of fever and age of patients, $p<0.05$ was considered significant.

Diagnostic criteria

Enteric fever: blood culture result positive for *Salmonella typhi* or *Salmonella paratyphi*. Urinary tract infection: bacterial colony count ≥1000 colony forming units (CFU)/ ml on urine culture. Dengue fever: dengue antigen positive or positive IgM antibody. Pneumonia: chest radiograph (X-ray) findings. Malaria: malarial parasite positive on peripheral blood smear or immunochromatography.

RESULTS

A total of 174 patients of AUFI were enrolled in the study during the period of July 2017 to August 2018. 112 (64.3%) were male and 62 (35.7%) were female (Table 1). In our study, most common symptom was fever (100%), altered bowel habits (55.7%), pain abdomen (55.1%), myalgias (52.8%), headache (51.7%), irritability (51.1%), rash (49.4%) and vomiting (43.1%). While as common sign was pallor (37.3%) and splenomegaly (29.8%). In our study viral fever was the most common cause of undifferentiated fever (40.5%) followed by enteric fever (33.9), urinary tract infection (UTI) (14.3%), dengue (6.8%) and malaria (4.5%) (Figure 1).

Table 1: Age distribution of cases of AUFI.

Age (years)	N	%
10-17	56	32.2
18-25	69	39.7
26-32	49	28.1
Total	174	100

Table 2: Gender distribution of cases of AUFI.

Gender	N	%
Males	112	64.3
Females	62	35.7
Total	174	100

Table 3: Clinical profile of cases of AUFI.

Clinical profile	N	%
Symptoms		
Fever	174	100
Vomiting	75	43.1
Abdominal pain	96	55.1
Rash	86	49.4
Irritability	89	51.1
Altered bowel habits	97	55.7
Headache	90	51.7
Clinical features		
Myalgias	92	52.8
Spleenomegaly	52	29.8
Altered sensorium	40	22.9
Pallor	65	37.3

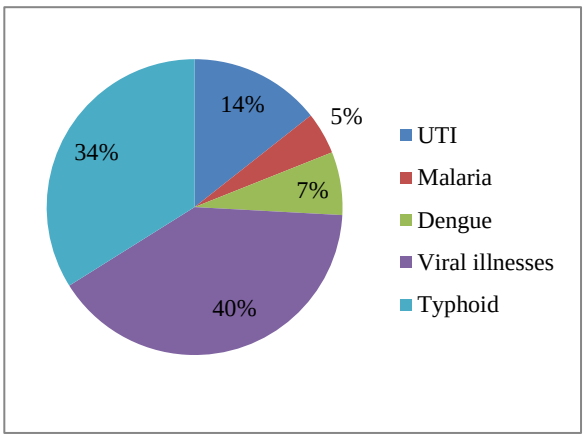

Figure 1: Depicting causes of AUFI as shown below.

Table 3: Laboratory parameters of cases of AUFI.

Laboratory parameters	N	%
Hemoglobin (Hb) <11	90	51.7
Leucocytosis (mm^3)	53	30.4
Widal test	59	33.9
Urine routine (10^{5}CFU/ml)	25	14.3
Malaria	8	4.5
Dengue (NS-1) antigen	12	6.8

DISCUSSION

Acute undifferentiated febrile illness (AUFI) is the clinical condition difficult to find but can be treated once etiological agent is detected. Acute undifferentiated febrile illness (AUFI) is a potential problem in clinical practice.[12] In our study males 112 (64.3%) were more affected than female 62 (35.7%), as males are more involved in outdoor activities which is consistent with other studies.[13] Incidence of cases of AUFI are also seen in post monsoon period, as water supplies get contaminated during this season ,leading to increase in number of AUFI cases as has been reported by other studies.[14,15] Enteric fever, dengue malaria have been found to be common causes of AUFI in Thailand, Nepal and in many other states of our countries.[16,17] In our study, enteric fever is the second most common cause of AUFI which is consistent with other studies.[18,19] In our study, most common symptom was fever (100%), altered bowel habits (55.7%), pain abdomen (55.1%), myalgias (52.8%), headache (51.7%), irritability (51.1%), rash (49.4%) and vomiting (43.1%). While as common sign was pallor (37.3%) and splenomegaly (29.8%). In our study viral fever was the most common cause of undifferentiated fever (40.5%) followed by enteric fever (33.9), urinary tract infection (UTI) (14.3%), dengue (6.8%) and malaria (4.5%), which is consistent was reported by other studies.[20] Besides this, 20-50% of all febrile illnesses in Asia and Africa among adults and children above five years of age are attributed to non malarial fevers in addition to decrease in number of malarial cases which is consistent with our study.[21,22] Our study highlighted various etiologies and clinical presentations of acute undifferentiated fever in an ED of a tertiary care centre of low and middle income country.

Limitations

This study has several limitations. Firstly, we only reported the current clinical practice of diagnosis of acute undifferentiated fever and did not make an exhaustive search into all the causes of fever since viral studies are not available in our institute and it would have increased the cost to the patient.

CONCLUSION

Despite of all limitations, our study clearly revealed that predominant cause of acute undifferentiated fever in our region was caused due to viral illnesses based on clinical judgment and inconclusive laboratory test followed by enteric fever and also UTI, pneumonia and dengue. Understanding of aetiology, their local prevalence and their specific feature will help in treating acute undifferentiated fever cases during outbreak. Acute febrile illness can lead to fatal conditions if misdiagnosed or mistreated.

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Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Joshi R, Colford JM, Reingold AL, Kalantri S. Nonmalarial acute undifferentiated fever in a rural hospital in central India: diagnostic uncertainty and overtreatment with antimalarial agents. Am J Trop Med Hygiene. 2008;78:393 -9.
2. Kashinkunti MD, Gundikeri SK, Dhananjaya M. Acute undifferentiated febrile illness- clinical spectrum and outcome from a tertiary care teaching hospital of north Karnataka. Int J Biol Med Res. 2013;4:3399-40.
3. National vector born disease control programme. Dengue/Denue hemoorahic fever 2013. Available at: http://www.nhp.gov.in/nvbcp Accessed on March 2014. Accessed on 20 September 2021.
4. Nield LS, Kamat D. Fever without focus. Kliegman RM, Stanton BF, Schor NF, Geme JW, Berhmann RE, eds. Nelson textbook of paediatrics. 20th ed. Philadelphia: Elsevier Inc; 2016:1283.
5. Susilawati TN, McBride WJ. Acute undifferentiated fever in Asia: a review of the literature. Southeast Asian J Trop Med Public Health. 2014;45:719-26.
6. Costa F, Hagan JE, Calcagno J, Kane M, Torgerson P, Martinez-Silveira MS, et al. Global morbidity and mortality of leptospirosis:a systematic review. PLoS Negl Trop Dis. 2015;9(9):e0003898.
7. Chrispal A, Boorugu H, Gopinath KG, Chandy S, Prakash JA, Thomas EM, et al. Acute undifferentiated febrile illness in adult hospitalized patients: the disease spectrum and diagnostic predictors - an experience from a tertiary care hospital in South India. Trop Dr. 2010;40(4):230-4.
8. Acestor N, Cooksey R, Newton PN, Menard D, Guerin PJ, Nakagawa J, et al. Mapping the aetiology of non-malarial febrile illness in Southeast Asia through a systematic review--terra incognita impairing treatment policies. PLoS One. 2012;7(9): e44269.
9. Liu L, Johnson HL, Cousens S, Perin J, Scott S, Lawn JE, et al. Global, regional, and national causes of child mortality: an updated systematic analysis for 2010 with time trends since 2000. Lancet. 2012; 379(9832):2151-61.
10. Bell M, Archibald LK, Nwanyanwu O, Dobbie H, Tokars J, Kazembe PN, et al. Seasonal variation in

the etiology of bloodstream infections in a febrile inpatient population in a developing country. Int J Infect Dis. 2001;5(2):63-9.
11. Prakash GM, Anikethana GV. Clinical, biochemical and hematological pointers toward dengue infection in patients with acute undifferentiated fever. Int J Sci Stud. 2016;4:111-3.
12. Thangarasu S, Natarajan P, Rajavelu P, Rajagopalan P, Seelinger DJS. A protocol for the emergency department management of acute undifferentiated febrile illness in India. Int J Emerg Med. 2011;4:57.
13. Mittal G, Ahmad S, Agarwal RK, Dhar M, Mittal M, Sharma S. Aetiologies of acute undifferentiated febrile illness in adult patients – an experience from a tertiary care hospital in northern India. J Clin Diagn Res. 2015;9:22-4.
14. Jena B, Prasad MNV, Murthy S. Demand pattern of medical emergency services for infectious diseases in Andhra Pradesh : A geo-spatial temporal analysis of fever cases. Indian Emerg J. 2010;1(5):821.
15. Murdoch DR, Woods CW, Zimmerman MD, Dull PM, Belbase RH, Keenan AJ, et al. The aetiology of febrile illness in adults presenting to Patan Hospital in Kathmandu, Nepal. Am J Trop Med Hyg. 2004; 70(6):670-5.
16. Ellis RD, Fukuda MM, McDaniel P, Welch K, Nisalak A, Murray CK, et al. Causes of fever in adults on the Thai-Myanmar border. Am J Trop Med Hyg. 2006;74:108-13
17. Kashinkunti MD, Gundikeri SK, Dhananjaya M. Acute undifferentiated febrile illness- clinical spectrum and outcome from a tertiary care teaching hospital of north Karnataka. Int J Biol Med Res. 2013;4:3399-40.
18. Sharma J, Malakar M. Distribution of typhoid fever in different rural and urban areas of Lakhimpur district of Assam. Int J Res Dev Health. 2013; 110914.
19. Ochiai RL, Acosta CJ, Danovaro-Holliday MC, Baiqing D, Bhattacharya SK, Agtini MD, et al. A study of typhoid fever in five Asian countries: disease burden and implications for controls. Bull World Health Organ. 2008;86(4):260-8.
20. Leelarasamee A, Chupaprawan C, Chenchittikul M, Udompanthurat S. Aetiologies of acute undifferentiated febrile illness in Thailand. J Med Assoc Thai. 2004;87:464-72.
21. WHO informal consultation on fever management in peripheral health care settings: a global review of evidence and practice. Available at: https://www.afro.who.int/publications/who-informal-consultation-fever-management-peripheral-health-care-settings-global. Accessed on 20 September 2021.
22. Prasad N, Murdoch DR, Reyburn H, Crump JA. Etiology of severe febrile illness in low- and middle-income countries: a systematic review. PLoS One. 2015;10(6):e0127962.

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