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ETIOLOGICAL PROFILE OF TROPICAL DISEASES IN ACUTE FEBRILE ILLNESS PATIENTS AND DETERMINE THEIR CLINICAL FINDINGS.

Internal Medicine

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ABSTRACT

Introduction: Tropical diseases are prevalent in regions between the Tropic of Cancer and the Tropic of Capricorn due to favorable conditions for pathogen growth. Factors such as poverty and poor living conditions contribute to their higher prevalence. Increased connectivity has led to the spread of tropical infections to new areas. Fever is the common initial symptom, and respiratory complications have been observed, especially during the COVID-19 pandemic. **Aim and Objective:** This study aimed to identify the etiological and clinical profile of patients with acute febrile illness and tropical infections in Uttarakhand, India. The objective was to study the etiological profile of tropical diseases and determine their clinical and laboratory findings. **Materials and Methods:** The study was conducted at Shri Mahant Indresh Hospital, SGRRIM&HS Dehradun, from July 2021 to December 2022. Adult patients with fever lasting 2-14 days and no specific foci of infection were included. Ethical approval and written informed consent were obtained. Data on symptoms, signs, and relevant parameters were recorded using a study proforma. **Results:** The study included 100 patients with a mean age of 39.86 ± 16.3 years. The most common symptoms were fever, headache, myalgia, and arthralgia. Dengue was observed in 41% of cases, followed by scrub typhus (14%), typhoid (12%), malaria (12%), chikungunya (9%), and mixed infections (6%). Six cases remained undiagnosed. **Conclusion:** Dengue was the most common tropical disease in Uttarakhand, followed by scrub typhus, typhoid, malaria, and chikungunya. Fever was the predominant symptom. Clinical investigations are crucial for diagnosis, and the deranged clinical and laboratory profile may indicate severe infection or complications requiring intensive care and appropriate management.

KEYWORDS

INTRODUCTION

Tropical diseases are commonly found in the geographical areas between the Tropic of Cancer and the Tropic of Capricorn. These diseases are prevalent among the population residing in these tropical regions due to the favourable conditions for pathogen growth, influenced by the hot and humid weather. Factors such as poverty, poor living conditions, and underdevelopment in some countries contribute to the higher prevalence of these infections. (1)

The increased connectivity through tourism, air travel, and immigration has led to the spread of tropical infections to unusual places. (2) Fever, particularly with a temperature of 38 degrees Celsius or higher, is the most common initial symptom of tropical diseases, lasting for 2-7 days without a specific localized source. (3) Respiratory complications associated with these infections, including acute respiratory distress, have been recently observed, often leading to a poor prognosis. This is especially concerning during the COVID-19 pandemic, as the morbidity associated with tropical infections has increased.(4)

Tropical diseases are caused by various bacteria, viruses, and protozoa, with insect bites being the most common mode of transmission. In India, post-monsoon periods see the prevalence of tropical fevers such as Dengue, Malaria, Chikungunya, Leptospirosis, Typhoid, and Scrub typhus, with Dengue, Chikungunya, Malaria, Scrub typhus, and Typhoid being prevalent in Uttarakhand and neighboring states. These diseases can have complicated presentations, involving thrombocytopenia, encephalopathy, respiratory distress, jaundice, renal failure, and multi-organ failure.(5)

Patients with tropical diseases often require intensive care, including renal replacement therapy, mechanical ventilation, vasopressor support, and blood transfusion. Early clinical diagnosis and appropriate therapy are crucial to reduce morbidity and mortality. This study aimed to identify the etiological and clinical profile of patients with acute febrile illness and tropical infections in Uttarakhand.

AIM AND OBJECTIVE

To study the Etiological profile of Tropical diseases in Acute Febrile Illness patients and determine their Clinical and Laboratory findings.

MATERIALS AND METHODS

Study Design:
Study Site: Shri Mahant Indresh Hospital, SGRRIM&HS Dehradun
Study Duration: July 2021 to December 2022 (18 months)

Inclusion Criteria: Adult patients (≥18 years) with fever lasting 2-14 days, temperature ≥38ºC upon admission, and no specific foci of infection detected through history, physical examination, and routine investigations.

Exclusion Criteria:
Patients under 18 years, chronically ill patients, known fevers, collagen vascular disorders, endocrine disorders, malignancies, immuno-deficient states, drug-induced fever, tuberculosis or other chronic causes of fever, fever lasting more than 2 weeks, and COVID-19 RT/PCR positive patients.

Sample Size:
A total of 100 patients were included based on a minimum sample size calculation using the prevalence of dengue as reference.

Methodology:
The study obtained ethical approval and written informed consent from the patients. Detailed history, physical examinations, and necessary investigations were performed. Data on symptoms, signs, and relevant parameters were recorded using a study proforma.

Statistical Analysis:
Statistical analysis involved presenting categorical variables as numbers and percentages, and quantitative data as means ± SD or median with interquartile range. Non-parametric tests were used for non-normally distributed data, and associations between variables were analyzed using Mann-Whitney test for quantitative variables and Chi-Square or Fisher's exact test for qualitative variables. Statistical significance was considered at $p<0.05$.

Ethical Considerations:
The study obtained ethical approval from the institutional ethical committee, and written informed consent was obtained from all study participants. Privacy and confidentiality of patient information were maintained throughout the study.

RESULTS

Table 1:- Descriptive statistics of baseline characteristics of study subjects.

Baseline characteristics	Mean ± SD	Median(25th-75th percentile)	Range
Age(years)	39.86 ± 16.3	35(26-50.75)	18-80
Duration of hospital stay(days)	5.11 ± 1.26	5(4-6)	3-8
Duration of fever(days)	4.25 ± 0.94	4(4-5)	2-7
Total leucocyte count(/cumm)	6102.9 ± 4099.21	4500(3100-8810)	1100-18000

Platelet count(10^3/uL)	154.99 ± 106.95	128(76-214.5)	10-423
PCV(%)	42.66 ± 3.06	42(40-45)	37-50
SGOT(U/L)	71.21 ± 49.48	56(34-87.25)	14-234
SGPT(U/L)	61.59 ± 45.63	45(30-78)	12-256
Urea(mg/dL)	47.51 ± 43.73	33(26-45)	12-287
Creatinine(mg/dL)	1.14 ± 0.96	0.8(0.7-1.1)	0.4-6.4
Sodium(mmol/L)	140.75 ± 4.85	141(140-145)	127-150
Potassium(mmol/L)	4.29 ± 0.54	4.2(3.9-4.8)	3.1-5.6

The mean values of various parameters for the study subjects were as follows: age (years) was 39.86 ± 16.3, total leukocyte count (/cumm) was 6102.9 ± 4099.21, platelet count (10^3/uL) was 154.99 ± 106.95, PCV (%) was 42.66 ± 3.06, SGOT (U/L) was 71.21 ± 49.48, SGPT (U/L) was 61.59 ± 45.63, urea (mg/dL) was 47.51 ± 43.73, creatinine (mg/dL) was 1.14 ± 0.96, sodium (mmol/L) was 140.75 ± 4.85, and potassium (mmol/L) was 4.29 ± 0.54.

Table 2:-Distribution of age(years) of study subjects.

Age(years)	Frequency	Percentage
<=20	3	3.00%
21-30	40	40.00%
31-40	17	17.00%
41-50	15	15.00%
51-60	10	10.00%
61-70	11	11.00%
71-80	4	4.00%
Mean ± SD	39.86 ± 16.3	
Median(25th-75th percentile)	35(26-50.75)	
Range	18-80	

40 patients (40.00%) were in the age group of 21-30 years, followed by 17 patients (17.00%) in the 31-40 years group, 15 patients (15.00%) in the 41-50 years group, 11 patients (11.00%) in the 61-70 years group, 10 patients (10.00%) in the 51-60 years group, and 4 patients (4.00%) in the 71-80 years group. Only 3 out of 100 patients (3.00%) were in the age group of 20 years or younger. The mean age of the study subjects was 39.86 ± 16.3, with a median age of 35 (25th-75th percentile: 26-50.75).

Table 3:-Distribution of symptoms of study subjects

Tropical diseases	Frequency	Percentage
No infection diagnosed	6	6.00%
Malaria	12	12.00%
Chikungunya	9	9.00%
Dengue	41	41.00%
Typhoid	12	12.00%
Scrub typhus	14	14.00%
Mixed infections	6	6.00%
Total	100	100.00%

In table 3 shows that nearly all of the patients suffering from tropical diseases were having fever followed by myalgia and headache.

Table 4:-Distribution of tropical diseases of study subjects.

Symptoms	Frequency	Percentage
Fever	100	100.00%
Headache	73	73.00%
Retro orbital ache	43	43.00%
Myalgia	84	84.00%
Arthralgia	51	51.00%
Arthritis	18	18.00%
Anorexia	67	67.00%
Rash	14	14.00%
Nausea/vomiting	52	52.00%
Pain abdomen	37	37.00%
Diarrhoea	6	6.00%
Constipation	14	14.00%
Cough	22	22.00%
Respiratory distress	18	18.00%
Hemoptysis	3	3.00%
Decreased urine output	12	12.00%
Icterus	9	9.00%
Confusion	13	13.00%
Altered sensorium	6	6.00%
Seizure	5	5.00%
Shock	16	16.00%
Bleeding manifestations	24	24.00%
Petechiae	17	17.00%
Gum bleed	10	10.00%
Malena	13	13.00%
Epistaxis	5	5.00%
Hematuria	2	2.00%

Among the 100 study subjects, the findings revealed the following: Dengue was observed in 41 cases (41%), scrub typhus in 14 cases (14%), typhoid in 12 cases (12%), malaria in 12 cases (12%), chikungunya in 9 patients (9%), mixed infections in 6 cases (6%), and 6 cases remained undiagnosed with any tropical infection.

DISCUSSION

The present prospective observational study was conducted in a tertiary care hospital in north India, on 100 patients with acute fever, with an aim to evaluate the tropical infections, clinical profile, complications, and outcomes among the patients.

In our study, mean age of the patients were 39.86 ± 16.3 years. Comparable to present study, the mean age was 42.92 years in study by Magazine R et al[6] where majority of the patients (48%) were less than 40 years. Among other studies, the mean age of the patients with JE in the study by Kalita J et al(7) was 35 years, which is lower than that of our study. Singhi S et al(5) reported that median age of the patients was 22 years. In the study by Siddiqi et al,(8) out of 162 patients with dengue, majority (n=76) were in age group of 26-50 years.

In the present study, fever was present in all patients with median duration of 4 days as we took all patients of acute febrile illness. There were a plethora of other symptoms like headache, myalgia, arthralgia, anorexia, nausea, vomiting, pain in the retroorbital region, pain in the abdomen, gastrointestinal symptoms, respiratory symptoms, urinary tract symptoms, neurological symptoms and bleeding manifestations. This is in concordance with other studies such as that by SinghiS et al(5) which reported that the fever was present in all patients, followed by other symptoms like vomiting as seen in 48% cases, coughing in 47% cases, headache in 34% cases and muscle pains and pain in the back in 32% cases. In the study by Siddiqi et al,[8] headache and fever was present in all patients with dengue, retro-orbital pain in 75% patients, nausea and vomiting in 52% and body ache, itching and rashes in 90%, 40% and 88%, respectively.Padyana et al(9) reported that in patients with dengue, common symptoms were fever followed by vomiting as seen in 58.3% cases, abdominal pain in 41.7% cases, breathlessness as seen in 57.3% cases, bleeding manifestations in 31.3% cases, and altered sensorium in 27.1% cases. In similar study by Gupta et al,[10] the clinical features seen among the patients were fever, body pain, cough, shock, dyspnea, haemoptysis, and vomiting.

CONCLUSION

We found that most common tropical disease was dengue, followed by scrub typhus, typhoid, malaria, and chikungunya. Most common symptoms were fever followed by headache, myalgia, arthralgia, anorexia, nausea, vomiting, pain in the retroorbital region, pain in the abdomen, gastrointestinal symptoms, respiratory symptoms, urinary tract symptoms, neurological symptoms and bleeding manifestations. The clinical investigations are thoroughly needed to reach a diagnosis. The deranged clinical and laboratory profile of the patients may indicate a severe infection or a complication which may warrant judicious management and ICU admission.

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