ORIGINAL RESEARCH PAPER

General Medicine

A STUDY ON SOCIO-DEMOGRAPHIC, CLINICAL AND LABORATORY PROFILE OF SCRUB TYPHUS IN HADOTI REGION KOTA, RAJASTHAN, AUGUST 2018-AUGUST 2019

KEY WORDS: Eschar, scrub typhus, MODS, ARDS.

Dr. Shyam Bihari Assistant professor, department of medicine Government medical college Kota

Dr. vijay kumar meena* PG resident, department of medicine Government medical college, Kota *Corresponding Author

Dr. S. R meena Professor and Head, Department of medicine Government medical college, kota

ABSTRACT

BACKGROUND: scrub typhus is one of the commonest Rickettsial disease in India and untreated cases have high fatality rate. We described the demographic, clinical and laboratory profile of scrub typhus patients in tertiary care hospital in Hadoti region Kota, Rajasthan from August 2018 to August 2019.

Methods: this is observational study was carried out in medicine department, MBS hospital Kota in which scrub typhus patients diagnosed clinically and confirmed by serum IgM antibody for scrub typhus positive by ELISA test in central laboratory.

Result: out of total 96 positive cases of scrub typhus, 26 cases (27%) were male and 70 cases (73%) were female. Majority of 34% cases were between 20-29 years of age group and majority 87.5% cases from rural area. All 96 cases (100%) presented with fever, followed by 87 cases (90%) with gastrointestinal symptoms, 78 cases (81.25%) with headach,62 cases (64.58%) with shortness of breath, 45 cases (46.87%) with generalised weakness and 28 cases (29.16%) with pain abdomen. 41 cases (42%) with hypotension, 36 cases (37.5%) with tachypnoea, 30 cases (31.25%) with rashes on body, 10 cases (10.41%) with eschar formation,26 cases (27%) with hepatomegaly, 20 cases (20.83%) and 9 cases with altered sensorium. Impaired liver function test, increased AST and ALT found in 92% cases, thrombocytopenia in 61.75% cases. In this study 90 cases (93.75%) were discharged and 6 cases (6.25%) were died . ARDS was most common complication, out of 12 cases of ARDS 9 cases (75%) were discharged and 3 cases (25%) were died then MODS 2 cases were died. In month of September and October highest 72 cases (75%) of scrub typhus were diagnosed. most of 37 cases (38.54%) belonged to Bundi district of hadoti region in Rajasthan.

Conclusion: scrub typhus should be a differential diagnosis in acute febrile illness cases in hadoti region Rajasthan. variety of clinical manifestation and complications of scrub typhus and majority of cases in September and October month.

INTRODUCTION:

Rickettsial disease are consider some of the most covert emerging and re-emerging disease and are being increasingly recognised in India. Among the major groups of rickettsiosis, commonly reported disease in India are scrub typhus, murine flea borne typhus, Indian tick typhus and Q fever.[1] scrub typhus caused by Orentia tsutsugamushi is an acute infectious disease of variable severity that is transmitted to humans by an arthropod vector of Trombiculidae family.[2] scrub typhus is an important cause of acute febrile illness and needs to be defriended from other cause of febrile illness such as malaria, enteric fever, dengue, leptospirosis and infectious mononucleosis etc.[2] The overall mortality varied from 7-9%, second only to malaria among infectious disease.[3]

Rickettsial disease in India has been documented from Jammu and Kashmir, Himachal Pradesh, Uttarakhand, Rajasthan, Assam, west Bengal, Maharashtra, Kerala and tamilnadu.[4] Incidence of scrub typhus among rural population.[1] the clinical spectrum of scrub typhus varies from mild to moderate severity. Acute fever is most common manifestation factor accompanied by headache, myalgia, and cough and shortness of breath. Incubation period varies from 7-21 days. Escher is a characteristics skin lesion usually observed in most of the scrub typhus patients and bite of this mite shows characteristics black Escher that is useful diagnosis. Severe complication included ARDS, pneumonia, MODS, encephalitis, circulatory collapse with haemorrhagic feature.[5,6]

Aim of this study was a provide a detailed panel of clinical aspects of this disease based on large patients population, thus helping to create a better clinical and laboratory profile of this disease.

METHODS:

this was observational study carried out in mbs hospital kota, Rajasthan, India. All confirmed scrub typhus 96 patients admitted in medicine ward during period of august 2018 - august 2019 after taking verbal and written consent of the patients were enrolled in this study. All cases were confirmed by positive ELISA test IgM antibody for scrub typhus performed at central laboratory of mbs hospital kota. A predesigned Performa was used to collect detailed such as socio-demographic details, name, detailed address and clinical data of patient. Data were statically analysed by using spss software.

RESULTS:

Total 96 cases were positive for scrub typhus by ELISA between august 2018 – august 2019. Out of 96 scrub typhus cases, 26 cases (27%) were male and 70 cases (73%) were female. Majority of 32 cases (34%) were between 20-29 years of age group and majority 87.5% cases from rural area (table 1).

Table 1: socio-demographic characteristics of scrub typhus cases

Variable	Frequency	Percentage
Age Group		
10 – 19 years	7	7.29%
20 - 29	32	33.33%
30 – 39	14	14.58%
40 – 49	12	12.50%
50 – 59	15	15.62%
>60 years	16	16.66%
Sex		
Male	26	27%
Female	70	73%
Area Urban Rural	12 84	12.50% 87.50%

Geographical distribution of scrub typhus in hadoti region (table 2), the majority of cases belonged to bundi district 37 cases (38.54%) followed by kota district 32 cases (33.83%), baran district 17 cases (17.70%) and Jhalawar district 10 cases (10.41%), p value (0.0319) which is significant.

Table 2: geographical distribution

District	No. of cases	Percentage	P value
Bundi	37	38.54%	0.0319
Kota	32	33.33%	
Baran	17	17.70%	
Jhalawar	10	10.41%	

All 96 cases(100%) presented with fever followed by 87 cases(90%) with gastrointestinal symptoms, 78 cases(81.25%) with headache, 62 cases (64.58%) with shortness of breath, 45 cases (46.87%) with generalised weakness and 28 cases (29.16%) with pain abdomen.

41 cases (42%) with hypotension, 36 cases (37.5%) with tachypnoea, 30 cases (31.25%) with rashes on body, 10 cases (10.41%) with eschar formation, 26 cases (27%) with hepatomegaly, 20 cases (20.83%) with splenomegaly and 9 cases (10%) with altered sensorium (table 3).

Table 3: Clinical profile of scrub typhus cases.

Sign & symptom	Male		Female		Total	
	N=26	%	N=70	%	N=96	%
Fever	26	100	70	100	96	100
Headache	20	76	58	82.85	78	81.25
GI symptoms	22	84.61	65	92.85	87	90.62
Shortness of breath	10	38.46	52	74.28	62	64.58
Pain abdomen	8	30.76	20	28.57	28	29.16
Generalised weakness	11	42.30	34	48.57	45	46.87
Eschar	2	7.69	8	11.42	10	10.41
Lymphadenopathy	5	19.23	18	25.71	23	23.95
Rash	8	30.76	24	34.28	30	31.25
Jaundice	4	15.30	18	25.71	22	22.91
Hypotension	11	42.30	30	42.85	41	42.70
Hepatomegaly	6	23.07	20	28.57	26	27.08
Splenomegaly	2	7.69	18	25.71	20	20.83
Tachypnoea	8	30.76	28	40	36	37.5
Altered sensorium	1	3.84	8	11.42	9	9.37

In month of September 40 cases(41.66%) and October 32 cases(33.33%) of scrub typhus diagnosed. **P value (** 0.0655) which is not significant (table 4).

Table 4: Number of cases of scrub typhus per month.

Months	No of cases	Percentage	P value
August 2018	5	5.20%	0.0655
September 2018	40	41.66%	
October 2018	32	33.33%	
November 2018	10	10.41%	
December 2018	0	0%	
January 2019	0	0	
February 2018	0	0	
March 2019	1	1.04%	
April 2019	0	0	
May 2019	0	0	
June 2019	1	1.04%	
July 2019	2	2.08%	
August 2019	5	5.20%	

In context with age of patients in this study, patients having age less then 40 year were 53 and out of which 2 cases (3.77%) died where's 51 cases (96.22%) were discharged. Similarly, among patients aged more than 40 year were 43 cases out of which 4 cases (9.30%) died and 39 cases (90.69%) were discharged. This difference in the outcome and age group was not statically significant(p value 0.8873).

In this study scrub typhus affect both genders and female more affected then male. Out of 26 male patients 24 cases were discharged and 2 cases (7.69%) were died. out of 70 cases of female 66 cases were discharged and 4 cases (6%) were died, which was not statically significant(p value = 0.830).

In this study majority 84 cases (87.5%) from rural area and only 12 cases (12.5%) from urban area. So, outcome (p value = 0.3532) not affected by residence pf patients (table 5)

Table 5: Demographic factor affecting outcome.

Variable	outcome				p value
	Group	discharged	death	total	
Age	<40	51(96.22%)	2(3.7%)	53	0.8873
	>40	39(90.69%)	4(9.30%)	43	
Sex	Male	24(92.3.41%)	2(7.69%)	26	0.830
	Female	66(94.28%)	4(6%)	70	
Area	urban	10(83.33%)	2(16.66%)	12	0.3532
	Rural	80(95.23%)	4(4.76%)	84	

In this study out of 96 patients 90 cases (93.75%) were discharged and 6 cases (6.25%) were died.

In this study laboratory profile of scrub typhus patients in which most of patients59 cases (61.45%) have thrombocytopenia. Liver enzyme SGOT and SGPT increased in 92% of the patients. Impaired renal function in the form of elevated serum creatinine level noted in 31.25% cases. (table 6)

Table 6: laboratory profile

Lab parameter	No. of patients (%)
Leucocytosis(>11000/cmm)	40 (41.66%)
Thrombocytopenia<150000/cmm	59 (61.45%)
Raised ESR	68(70.83%)
Raised AST >50 IU/L	86(89.58%)
Raised ALT >50 IU/L	89(92.75%)
s. bilirubin > 2mg/dl	22(22.91%)
s. creatinine> 1.6 mg/dl	30(31.25%)
S, IgM for scrub typhus	96(100%)

Among the complication ARDS is most common 12 cases(12.5%) out of which 3 cases were died. And followed by MODS 6 cases, pneumonia 6 cases and encephalitis 2 cases.

DISCUSSION:

in our study majority of cases 87.5% were from rural area. This is congruence with data published by Indian council of medical research[1]. In our study incidence of scrub typhus among female is more common 70 cases (72.91%), similar study conducted by Pataniuel S et al in south India found 51% cases were female[7]. The most common age group affected in our study between 20-29 year(34%cases). this observation was similar to study conducted in Manipal india[8].

In our study majority of 37 cases (38.54%) belonged to Bundi district of hadoti region Rajasthan followed by Kota, Baran, Jhalawar.

In our study most common symptom was fever in 100% cases, followed by GI symptoms which is similar to study conducted by Gopal DS et al[9] and study by Philomena J et al[10]. Eschar which is very helpful in diagnosing scrub typhus was found in only 10 cases (10.41%) in our study. Various other studies found prevalence of eschar to vary from 7-97%[11] and the incidence of eschar in a study conducted in south India by Varghese GM et al was 55%[12]. Lymphadenopathy in our study was in 23 cases (23.95%) and hepatosplenomegaly present in 27% cases, hepatosplenomegaly as well as lymphad enopathy were found to be common in various studies[13,14].

In our study 59 cases (61.45%) was presented with thrombocytopenia and leucocytosis in 40 cases (41.66%) a common sign of bacterial etiology which is similar to study conducted in Vellore by Varghese GMA et al[15]. In our study

elevation in SGOT (89% cases) and SGPT (92.75% cases) above 50 IU/L was in many cases with raised in bilirubin in 22% cases and raised serum creatine >1.6 mg/dl in 31.25% cases.

MODS and ARDS are the common complications associated with scrub typhus with high mortality rate[8]. In our study ARDS present in 12 cases out of these 3 cases (25%) died and 6 cases of pneumonia 1 case died and 6 cases of MODS 2 cases were died which is similar to study conducted by Wang CC et al[16]. In our study case fatality rate was 6 cases (6.25%) and most common cause was ARDS (3 cases).

In our study scrub typhus affected patient's prevalence was highest in September- October month. Similar study conducted in Vellore TN by Philomena J et al[10] in which most of cases were found during the month of September to January[17].

CONCLUSION:

this study shows the wide variety of clinical manifestation and complication of scrub typhus a well-known mite borne disease in hodoti region kota Rajasthan. Clinicians should be aware of the disease when patient present with short term fever, scrub typhus should be considered as possibility after malaria, dengue and enteric fever. The study highlights the clustering of cases during the month of September to December. An empirical therapy with doxycycline should be started if there is high index of suspicion. An early diagnosis and antibiotic therapy may prevent further complications and mortality.

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