



FREQUENCY OF SCRUB TYPHUS IN A TERTIARY CARE HOSPITAL OF NORTHERN INDIA IN SUB-HIMALAYAN REGION

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ABSTRACT **Background and Objective:** Scrub typhus is an endemic zoonotic infectious disease caused by the rickettsial bacteria *Orientia tsutsugamushi*, an obligate intracellular microbe. It is a serious public health problem in the Asia-Pacific region. The aim of this study was to identify the prevalence of scrub typhus in DRPGMC, a tertiary care hospital in Northern India. **Methodology:** A total of 2187 serum samples of 1022 males (46.73%) and 1165 females (53.27%) with suspected scrub typhus were received in the Department of Microbiology, DRPGMC over a period of 2 years from November 2019 to October 2021. Scrub typhus was tested by IgM ELISA (Inbios International, USA). **Results:** Scrub typhus was diagnosed in 322 (14.72%) patients and the majority of them were observed from August to November. Serum reactive test in females (61.80%) were in predominance as compared to serum reactive test in males (38.20%) with a ratio of 1.6:1. Majority of the samples (71.05%) were from age group 19 years to 60 years and least (4.12%) from age group 13 years to 18 years. **Conclusion:** The number of cases of Scrub typhus disease is increasing in North India and it is a matter of great concern. Health education campaigns focusing on the awareness of disease, quick diagnosis and prompt management is required to minimize morbidity and mortality from the disease.

KEYWORDS : Scrub typhus, North India, Prevalence, Enzyme linked immunosorbent assay (ELISA).

INTRODUCTION:

Scrub typhus is an acute "undifferentiated" febrile illness, a vector borne endemic zoonotic infection caused by *Orientia tsutsugamushi* which is transmitted to humans by bite of infected chiggers (larva) of trombiculid mite which belong to genus *Leptotrombidium*. Vector activity is related to temperature, rainfall and various socio-economic factors. Scrub typhus is a serious threat to public health in Asia-Pacific region causing illness in one million people per year². The disease has become significant occupational hazard in rural workers, agriculturists, forest occupation and those living in proximity of scrub vegetation³.

Himachal Pradesh is a small state in Northern India with predominant mountainous terrain. Repeated outbreak of scrub typhus has been noticed in H.P during monsoon and post monsoon season and scrub typhus is a major cause of undifferentiated fever. The present study focused to estimate the frequency of scrub typhus in region of Northern India. Out of 29 states of India, 23 states have reported the presence of scrub typhus and is now a commonest cause of acute febrile illness in India⁴⁻⁷. The aim of the present study was to retrospectively analyse the frequency of scrub typhus.

METHODOLOGY:

A retrospective study was conducted in Department of Microbiology, DRPGMC a period of two years from November 2019 to October 2021. All samples were tested for detection of IgM antibodies to Scrub typhus by using ELISA test (Inbios International USA). IgM ELISA was used as a diagnostic test which has higher sensitivity and specificity as compared to Weil-felix test.

RESULT:

- 2187 samples with suspected Scrub typhus were received from Nov'2019 to Oct'2021.
- 1022 (46.73%) were males and 1165 (53.27%) were females.
- Maximum number of samples were received between month of August to November.
- Maximum number of samples were received from age group 19-60 years.
- Maximum number of samples were received from district Kangra (H.P.).

Table1: Total samples received and age wise distribution.

S.no:	Age (years)	Total samples	Male	Female
1.	0-12	125	74	51
2.	13-18	90	51	39

3.	19-60	1554	715	839
4.	60+	418	182	236
Total		2187	1022	1165

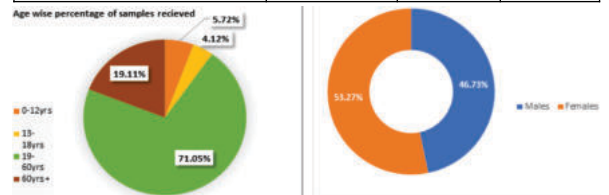


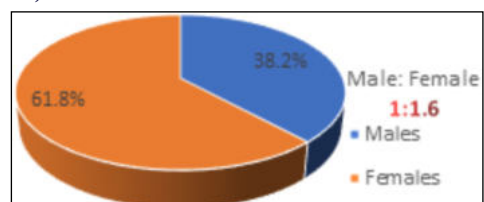
Table 2 : District wise distribution of Samples.

S. No:	District	Samples	Percentage (%)
1.	Kangra	1623	74.2
2.	Chamba	236	10.8
3.	Hamirpur	155	7.1
4.	Mandi	118	5.4
5.	Una	46	2.1
6.	Bilaspur	09	0.4
Total		2187	

Table 3 : Total reactive samples - age wise distribution.

S.no:	Age (years)	Total samples	Male	Female	%age samples	M:F ratio
1.	0-12	16	8	8	12.8	1:1
2.	13-18	15	5	10	16.67	1:2
3.	19-60	247	90	157	15.89	1:1.17
4.	60+	44	20	24	10.52	1:1.2
Total		322	123	199		1:1.6

- Total 322 (14.72%) samples were reactive with 123 (38.20%) males and 199 (61.80%) females with overall male to female (M:F) ratio 1:1.6.

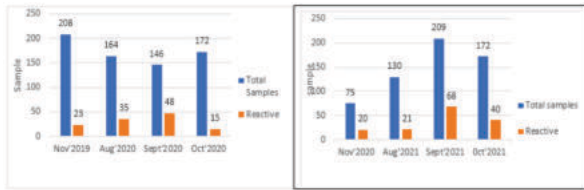


- **Maximum reactive samples were in age group 19-60 years.**

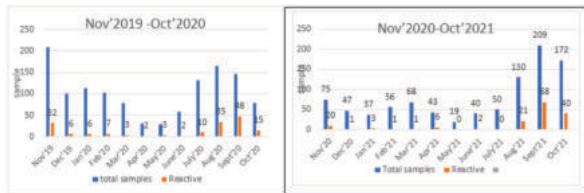
Table 4 : District wise distribution of reactive samples.

S.no:	District	Reactive Samples	Percentage (%)
1.	Kangra	216	67.1
2.	Chamba	36	11.2
3.	Hamirpur	31	9.6
4.	Una	19	5.9
5.	Mandi	17	5.3
6.	Bilaspur	3	0.9
Total		322	

- **Bar Diagram 1:** Seasonal variation (Nov'2019 to Oct'2020 & Nov'2020 to Oct'2021).



- **BAR DIAGRAM 2:** Year wise total samples and reactive samples on monthly basis.



DISCUSSION :

The climate, temperature, rainfall, humidity, high prevalence of infective vectors and increased contact between humans and vectors, rich growth of vegetation's during rainy season favour disease transmission.

Prevalence of Scrub typhus in our study is 14.72% in comparison to various studies in India showed prevalence which range from 13 to 63%⁸⁻¹⁰. Most of cases seen in adult age group (19 years-60 years) , as this group is dedicated for outdoor activity for earning and living followed by adolescent age group (13 years-18 years).

Female predominance , male: female ratio (1:1.6) was seen in this study. This could be due to more agriculture activities done by females in rural areas of this region.

High prevalence of this disease was found in district Kangra (H.P.) , which might be due to easy availability of diagnostic facilities and more population in this district as compared to other. Also this study was conducted in tertiary care hospital situated in district Kangra (H.P.).

CONCLUSION

- The pan-India presence of Scrub typhus has been well dominated particularly from Himalayan region of north India.
- This study provides beneficial, regional, age wise distribution data along with seasonal variation of Scrub typhus which can inform public and clinical health guidelines at local level.
- Health education campaign focusing on awareness of disease , quick diagnosis and prompt management is required to minimize morbidity and mortality from the disease.
- An increasing awareness of this disease combined with prompt management will go a long way in decreasing both morbidity and mortality from this disease.

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