IAR Journal of Medical Case Reports
ISSN Print : 2709-3220 | **ISSN Online :** 2709-3239
Frequency : Bi-Monthly
Language : English
Origin : Kenya
Website : https://www.iarconsortium.org/journal-info/iarjmcr

OPEN ACCESS JOURNALS

Research Article

Haematological findings in Pediatric Scrub Typus Patients of Hilly District of North India

Article History

Received: 08.03.2020
Revision: 14.03.2020
Accepted: 23.03.2021
Published: 30.03.2021

Author Details

Dr. Raju[1] & Dr. Vipin Roach[2]

Authors Affiliations

[1]Medical Officer (Specialist), Himachal Pradesh Health Services,(HPHS), Govt of Himachal Pradesh, India

[2]Assistant Professor, Department of Pediatrics, I.G.M.C., Shimla, Himachal Pradesh, India

Corresponding Author*
Dr. Vipin Roach

How to Cite the Article:
Dr. Raju & Dr. Vipin Roach (2021); Haematological findings in Pediatric Scrub Typus Patients of Hilly District of North India. *IAR J Med Cse Rep. 2(2)* 10-12

Abstract: ***Background:*** The World Health Organization has reported scrub typhus one of the world's most under diagnosed and under reported disease that often requires hospitalization. The aim of this study is to determine the Hematological manifestations among patients with Scrub typhus. ***Materials and Methods:*** This cross-sectional Sero-Epidemiological study was conducted in the department of Paediatrics, Indira Gandhi Medical College, and Shimla from 1st June 2017 to 30th Nov 2018. The study participants were newly diagnosed paediatric cases(n-102) of scrub typhus with a positive Scrub typhus IgM ELISA test. ***Results:*** Out of 102 cases 75 (73.5%) cases had increased ESR (>20), 51(50.0%) cases had low haemoglobin level (Hb < 11), followed by 33(32.4%) cases had leucocytosis (TLC >12000/cumm) with mean value of 11363±6426, leucopenia was documented in 1 case (0.9%), lymphocytosis (>40%) was present in 30 (29.4%) cases and Neutrophillia >75% in 15(14.7%) cases. Thrombocytopenia (platelets < 150,000/cumm) was present in 31(30.4%) cases ***Conclusion:*** Early recognition and focused management of Hematological complications may help reducemorbidity and mortality associated with Scrub typhus infection.

Keywords: Hematological manifestations, scrub typhus, Shimla.

INTRODUCTION

The World Health Organization has reported scrub typhus one of the world's most under diagnosed and under reported disease that often requires hospitalization. Better understanding of the vectors, its outbreaks and its pathogenesis is required to control human outbreaks within and beyond its recognized regions of endemicity (Luce-Fedrow, A. *et al.*, 2018; & World Health Organization. 2018).

Himachal Pradesh is a mountainous state in northern India, situated at an altitude between 350-6816 meters above mean sea level. During the rainy seasons, areas of lower altitudes experience an average temperature between 20ºC to 35ºC which is suitable for the spread of arthropod vector. Maximum number of the cases are being reported between the months of July to November (Sharma, A. *et al.*, 2005).

Scrub typhus is an acute febrile illness caused by *O. tsutsugamushi* (Kim, D. M. *et al.*, 2007). Thrombocytopenia (platelet count <150,000/cmm) is also very ommon and DIC is a well-recognized complication of Scrub typhus (Rajapakse, S. *et al.*, 2017).

Hemophagocyt i c syndrome, al so known as Hemophagocytic lymph histiocytosis (HLH), is a rare but serious complication, thought to occur due to dysregulated activation and proliferation of lymphocytes. Thrombotic complications are rare (Rajapakse, S. *et al.*, 2017; & Valsalan, R. *et al.*, 2010).

Scrub typhus is a well documented disease in the state of Himachal Pradesh, but there have been no studies on Hematological manifestations which is associated with the exposure to *Orientia tsutsugamushi* in the paediatric age group population. Therefore, this study was done to determine the Hematological manifestations among patients with Scrub typhus.

Aims and Objectives

- To determine the Hematological manifestations among patients with Scrub typhus.

MATERIALS AND METHODS

This study was conducted in the department of Paediatrics, Indira Gandhi Medical College, Shimla, a tertiary care teaching institute in Himachal Pradesh.

Duration of study: From 1st June 2017 to 30th Nov 2018.

Study Design: Cross-sectional Study.

Ethical Clearance: Approval from the Institutional ethical committee of Indira Gandhi Medical College Shimla.

Study Population

The study participants consisted of all 102 newly diagnosed paediatric cases of scrub typhus, admitted in pediatric ward of IGMC Hospital Shimla based on positive IgM against scrub typhus during the study period.

Exclusion Criteria

1. The study subjects having concomitant HIV, Malaria, Tuberculosis, Hepatitis, Typhoid and Acinetobacter septicaemia.
2. Participants in the control group B and group C having febrile illness during the last three months.
3. Participants or their parents who are not willing to participate in the study.

Sampling Method

All the diagnosed cases of scrub typhus based on enrolment criteria at the time of admission in the paediatric ward were enrolled

Statistical Analysis

Data from the case record files was recorded on a Microsoft excel spreadsheet. Statistical analysis was performed using Epi Info 7. All discrete variables were expressed as percentages.

RESULTS

In the present study, among 102 newly diagnosed cases of Scrub Typus, 57 (55.9%) were males while 45 (44.1%) were females. 39 (38.2%) were in the age group of 1-10 years while 63 (61.8%) were in the age group of 11-18 years.

Table 1: Age and Gender distribution of the Study Population

Variables	n(%)
Gender	
Male	57 (55.9%)
Female	45 (44.1%)
Age groups	
1-10 years	39 (38.2%)
11-18 years	63 (61.8%)

Haematological Profiles

Out of 102 cases 75 (73.5%) cases had increased ESR (>20), 51(50.0%) cases had low haemoglobin level (Hb < 11), followed by 33(32.4%) cases had leucocytosis (TLC >12000/cumm) with mean value of 11363±6426, leucopenia was documented in 1 case, lymphocytosis (>40%) was present in 30 (29.4%) cases and Neutrophillia >75% in 15(14.7%) cases. Thrombocytopenia (platelets < 150,000/cumm) was present in 31(30.4%) cases.

DISCUSSION

Scrub typhus is an underappreciated cause of acute febrile illness in many parts of India (Mahajan, S. K., & Bakshi, D. 2007; & Kamarasu, K. *et al*., 2007). It is caused by the rickettsial pathogen *O. tsutsugamushi*, which is transmitted by the bite of larval trombiculid mites inhabiting scrub vegetation. Often, it results in life-threatening complications such as acute respiratory distress syndrome, hepato-renal dysfunction, and meningoencephalitis (Mahajan, S. K. *et al*., 2006).

In the present study , out of 102 cases 75 (73.5%) cases had increased ESR (>20), 51(50.0%) cases had low haemoglobin level (Hb < 11), followed by 33(32.4%) cases had leucocytosis (TLC >12000/cumm) with mean value of 11363±6426, leucopenia was documented in 1 case (0.9%), lymphocytosis(>40%) was present in 30 (29.4%) cases and Neutrophillia >75% in 15(14.7%) cases. Thrombocytopenia (platelets < 150,000/cumm) was present in 31(30.4%) cases. In a study conducted by Digra *et al.,* (2010) and Vivekanandan *et al.,* (2010) leucocytosis was present in 28% and 30% respectively. In study done by and Vikrant *et al.,* (2013) thrombocytopenia was found in 10% cases.

CONCLUSIONS

Scrub typhus is endemic and documented zoonosis in the state of Himachal Pradesh as the climatic and geographical conditions are conducive for spread of vector of the scrub typhus. The general physicians should be sensitized regarding Haematological Findings associated with Scrub typhus which provides useful clue in diagnosis.

REFERENCES

1. Digra, S. K., Saini, G. S., Singh, V., Sharma, S. D., & Kaul, R. (2010). Scrub typhus in children: Jammu experience. *Jk Science*, *12*(2), 95.
2. Jiang, J., & Richards, A. (2018). Scrub typhus: no longer restricted to the Tsutsugamushi Triangle. *Tropical medicine and infectious disease*. *3*(11), 1-7
3. Kamarasu, K., Malathi, M., Rajagopal, V., Subramani, K., Jagadeeshramasamy, D., & Mathai, E. (2007). Serological evidence for wide

distribution of spotted fevers & typhus fever in Tamil Nadu. *Indian Journal of Medical Research*, *126*(2), 128.

4. Kim, D. M., Won, K. J., Park, C. Y., Yu, K. D., Kim, H. S., Yang, T. Y., ... & Shin, H. (2007). Distribution of eschars on the body of scrub typhus patients: a prospective study. *The American journal of tropical medicine and hygiene*, *76*(5), 806-809.
5. Luce-Fedrow, A., Lehman, M. L., Kelly, D. J., Mullins, K., Maina, A. N., Stewart, R. L., ... & Richards, A. L. (2018). A Review of Scrub Typhus (Orientia tsutsugamushi and Related Organisms): Then, Now, and Tomorrow. *Trop Med Infect Dis.* *3*(8),1-30
6. Mahajan, S. K., & Bakshi, D. (2007). Acute reversible hearing loss in scrub typhus. *JAPI*, *55*, 512-514.
7. Mahajan, S. K., Rolain, J. M., Kashyap, R., Bakshi, D., Sharma, V., Prasher, B. S., ... & Raoult, D. (2006). Scrub typhus in Himalayas. *Emerging infectious diseases*, *12*(10), 1590.
8. Rajapakse, S., Weeratunga, P., Sivayoganathan, S., & Fernando, S. D. (2017). Clinical manifestations of scrub typhus. *Transactions of the Royal Society of Tropical Medicine and Hygiene*, *111*(2), 43-54.
9. Sharma, A., Mahajan, S., Gupta, M. L., Kanga, A., & Sharma, V. (2005). Investigation of an outbreak of scrub typhus in the Himalayan region of India. *Japanese journal of infectious diseases*, *58*(4), 208.
10. Valsalan, R., Kosaraju, K., Sohanlal, T., & Kumar, P. P. (2010). Hemophagocytosis in scrub typhus. *Journal of postgraduate medicine*, *56*(4), 301.
11. Vikrant, S., Dheer, S. K., Parashar, A., Gupta, D., Thakur, S., Sharma, A., ... & Kanga, A. (2013). Scrub typhus associated acute kidney injury—a study from a tertiary care hospital from western Himalayan State of India. *Renal Failure*, *35*(10), 1338-1343.
12. Vivekanandan, M., Mani, A., Priya, Y. S., Singh, A. P., Jayakumar, S., & Purty, S. (2010). Outbreak of scrub typhus in Pondicherry. *J Assoc Physicians India*, *58*(1), 24-8.
13. World Health Organization. (2018). WHO recommended surveillance standards. Geneva: World Health Organization; 1999. Available at: https://apps.who.int/iris/handle/10665/65517 (Assessed on 16 November 2018).